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Vol. II. 1928.

THE

Bulletin of the Hill Museum

A MAGAZINE OF LEPIDOPTEROLOGY

J. J. JOICEY, F.L.S., F.Z.S., F.E.S., &c., and G. TALBOT, F.E.S.

WITH THE ASSISTANCE OF
L. B. PROUT, F.E.S., Miss A. E. PROUT, F.E.S.
and W. HAWKER-SMITH, F.E.S.

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(WITH 13 PLATES)

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EDITORS' NOTE.

The first volume of this publication was completed in 1924. We are pleased to announce, with the commencement of volume ii, that a part will be issued every quarter.

The subscription is 30s. each volume, post free; single parts at published price. Subscriptions payable in advance to G. Talbot, The Hill Museum, Wormley, Surrey.

Authors of papers accepted for publication receive twenty-five reprints free and any additional reprints at special rates.

The only papers accepted from outside sources are those which deal with collections made for the Hill Museum, or are based on studies carried out there.

The Bulletin will be sent in exchange for publications dealing with Lepidoptera.

With the present volume we issue separately, as a Supplement, a Monograph of the Pierine Genus *Delias*. This can be supplied only at the published price of 7s. 6d. per part. The first part will be published shortly.

A part of the Supplement will be issued with each part of the Bulletin every quarter. Price of each part of this Supplement 7s. 6d.

(1887).

A CATALOGUE OF THE LEPIDOPTERA OF HAINAN

By J. J. JOICEY and G. TALBOT.

(*Continued from the* BULLETIN OF THE HILL MUSEUM, Vol. I, p. 538.)

Forms which are recorded for the first time and those new to science and described elsewhere, are marked with an asterisk.

Family NYMPHALIDAE.

The following names are treated as synonyms :—

Cirrochroa tyche lesseta Fruh.
Cethosia cyane euanthes Fruh.
Precis orithya hainanensis Fruh.
Apatura parisatis hainana Fruh.
Apatura parisatis staurakius Fruh.
Apatura ambica garlanda Fruh.

81. **Ergolis ariadne alternus** Moore.

E. alternus Moore, *Proc. Zool. Soc.*, p. 698 (1878) (Hainan).
E. alternus Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 117 (1887).
E. alternus Crowley, *Proc. Zool. Soc.*, p. 507 (1900).

Interior, March, one ♂, April, two ♂ ♂, four ♀ ♀, May, three ♂ ♂, one ♀, June, one ♀, July, one ♂, one ♀, September, four ♂ ♂, October, one ♂, November, one ♂, no date, three ♂ ♂, one ♀ ; Nodoa, August, one ♀ ; Hoihow, January, one ♂, June, one ♂, December, one ♂, one ♀, April, to December, one ♀.

*82. **Penthema lisarda bowringi** J. and T.

Joicey and Talbot, BULL. HILL MUS., i, p. 169, pl. xxi, fig. 5 (1921) (Hainan).
P. michallati Crowley (nec Janet), *Proc. Zool. Soc.*, p. 507 (1900).

Interior, September, five ♂ ♂, one ♀, August, two ♂ ♂, June, on
April, one ♂, no date, one ♂.

83. **Cupha erymanthis erymanthis** Drury.

Pap. E., "Ill. Exot. Ent.," i. pl. xv, figs. 3, 4 (1773).

Messaras erymanthis Moore, *Proc. Zool. Soc.*, p. 699 (1878) (India).

C. erymanthis Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 116 (1887).

Interior, April, one ♂, May, two ♂ ♂, August, three ♂ ♂, one ♀, September, two ♂ ♂, one ♀, December, one ♀, May to August, one ♀, no date, one ♂; Hoihow, June, one ♀, no date, one ♀, August, two ♂ ♂; Nodoa, August, two ♂ ♂; Seven Finger Mountains, September, one ♂.

84. **Atella phalanta phalanta** Drury.

Pap. phalanta Drury, "Ill. Exot. Ent.," pl. xxi, fig. 12 (1773).

A. phalanta columbina Fruh. (nec Cram.), Seitz' "Macrolep.," ix, p. 471 (1912) (China, Hainan, Japan).

A. phalanta columbina Moore, *Proc. Zool. Soc.*, p. 699 (1878).

A. phalanta columbina Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 116 (1887).

Interior, November, one ♂, December, one ♂; Hoihow, May, one ♂, June, one ♂, November, one ♀, no date, 2 ♂ ♂; Five Finger Mountains, Namfung, March, one ♂.

Fruhstorfer, l. c., treats *columbina* as a race of *phalanta*, but these are two species which occur together. The so-called race is purely imaginary.

*85. **Atella alcippe alcippoides** Moore.

Atella alcippoides Moore, "Lep. Ind.," iv, p. 199, pl. ccclxi, fig. 1, 1*a*, *b* (♂ ♀ wet season), pl. ccclxi. fig. 1, *c*, *d* (♂ dry season) (1900, (Malay Pen.).

Interior, July, 1 ♂. A very bad specimen.

86. **Issoria sinha sinha** Koll.

Terinos sinha Hugel's Kaschmir, iv (4), p. 438 (1844).

Atella sinha Crowley, *Proc. Zool. Soc.*, p. 507 (1900).

Interior, April, one ♂, July, one ♂, one ♀, August, four ♂ ♂, nber, three ♂ ♂, no date, two ♂ ♂.

87. **Cynthia erota hainana** Holl.

C. deione v. hainana Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 116 (1887) (Hainan).

Joicey and Talbot, BULL. HILL MUS., i, p. 169, pl. xxi, figs. 6-8 ♀ (1921).

C. erota Crowley (nec Fabr.), *Proc. Zool. Soc.*, p. 507 (1900).

88. **Cirrochroa tyche mithila** Moore.

Proc. Zool. Soc., p. 558 (1872).

C. tyche lesseta Fruh., Seitz' "Macrolep.," ix, p. 487 (1912) (Hainan).

Interior, March, one ♀, May, three ♂ ♂, June, one ♂, July, one ♂. three ♀ ♀, August, four ♂ ♂, two ♀ ♀, September, seventeen ♂ ♂, six ♀ ♀, December, one ♂; Leanui, wet month, one ♂; Five Finger Mountains, May, two ♀ ♀.

There is no clearly defined seasonal form but the tendency is mostly towards the dry.

We think *lessetta* Fruh. should sink. It was founded on two ♂ ♂ and our series shows no constant deviation from the variation expressed by mainland specimens.

89. **Cethosia biblis hainana** Fruh.

Ent. Zeit., xxii, p. 135 (1908) (Hainan).

C. biblis Moore (nec Drury), *Proc. Zool. Soc.*, p. 699 (1878).

C. biblis Holland (nec Drury), *Trans. Amer. Ent. Soc.*, xiv, p. 116 (1887).

Interior, March, one ♂, April, two ♀ ♀, May, two ♂ ♂, one ♀, June, two ♂ ♂, one ♀, August, seven ♂ ♂, September, one ♂, October, one ♂, November, one ♂, December, two ♂ ♂, two ♀ ♀, no date, four ♂ ♂, one ♀; Nodoa, August, one ♂; Five Finger Mountains, Namfung, March, one ♂; Leanui, wet month, one ♂; Hoihow, May, two ♂ ♂, August, two ♂ ♂, April-December, one ♂, May-October, one ♂.

One ♀ taken in December is very little darker than the ♂ and shows a greenish suffusion along the inner margin of both wings.

90. **Cethosia cyane cyane** Drury.

"Ill. Exot. Ent.," i, pl. iv, fig. 1. ♀ (1770).

C. cyane euanthes Fruh., Seitz' "Macrolep.," ix, p. 503 (19' Tonkin, Annam, Siam).

(1887).

Interior, May, two ♂ ♂, July, three ♂ ♂ one ♀, August, one ♂, September, four ♂ ♂, no date, one ♂; Five Finger Mountains, Upper Huymo Doorg, Hoplohr Dist., April, one ♀; Hoihow, June, one ♂.

One ♀ (July) has a very broad white band on the fore wing. Another ♀ (F. F. M.) has the discal spots on the hind wing obsolete.

The differences given by Fruhstorfer for his race *euanthes* are not constant, and it must share the fate of so many other so-called geographical forms proposed by this author either on scanty material or on the assumption that a different area must produce a different form.

91. **Argynnis hyperbius** Joh.

Pap. hyperbius, *Amoen. Acad.*, vi, p. 408 ♀ (1764).

Hoihow, June, one ♂; Five Finger Mountains, Hoplohr District, April, one ♂; Sui Mahn Doorg, South Slope, June, one ♂, May 27, 1920, one ♀, May, one ♀.

92. **Precis iphita iphita** Cram.

Pap. iphita Cram., "Pap. Exot.," iii, p. 30, pl. cix, figs. C, D (1779) China).

Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 117 (1887).

f. vern.

Interior, May, one ♂, September, two ♂ ♂, one ♀; Nodoa, August, one ♂.

f. aest.

Interior, March, one ♂, April, one ♂, May, one ♂, July, one ♂, no date, two ♂ ♂.

93. **Precis atlites atlites** Linn.

Pap. atlites Linn., *Amoen. Acad.*, vi, p. 407 (1763).

Junonia atlites Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 117 (1887).

f. aest. *atlites* L.

Interior, March, one ♂, May, nine ♂ ♂, August, one ♂, December, two ♂ ♂; Five Finger Mountains, Namfung, March, two ♂ ♂; Hoihow, June, one ♂, no date, one ♂.

f. vern. *laomedia* Linn.

Pap. laomedia Linn., *Syst. Ent.*, xii, p. 772 (1767).

Junonia laomedia Moore, *Proc. Zool. Soc.*, p. 698 (1878).

nterior, May, four ♀ ♀, June, one ♀, December, one ♀.

94. Precis almana almana Linn.

Pap. almana Linn., *Syst. Nat.*, x, p. 472 (1758) ; xii, p. 769 (1767).
Junonia almana Moore, *Proc. Zool. Soc.*, p. 698 (1878).
Junonia almana Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 117 (1887).

f. aest. *almana.*

Interior, March, one ♂, April, two ♂ ♂, May, six ♂ ♂, June, one ♂, December, two ♀ ♀ ; Five Finger Mountains, Namfung, March, two ♂ ♂ ; Hoihow, January-December, one ♂.

f. vern. *asterie* L.

Pap. asterie Linn., *Syst. Nat.*, x, p. 472 (1758), xii, p. 769 (1767).
Junonia asterie Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 117 (1887).
Junonia asterie Crowley, *Proc. Zool. Soc.*, p. 507 (1900).

Interior, April, two ♀ ♀, May, six ♂ ♂, two ♀ ♀, July, one ♂, August, one ♂, September, two ♂ ♂, two ♀ ♀, October, one ♂, no date, two ♂ ♂ ; Five Finger Mountains, June, one ♂; Hoihow, April, one ♀, August, one ♂.

95. Precis lemonias lemonias Linn.

Pap. lemonias Linn., *Syst. Nat.*, x, p. 473 (1758) ; xii, p. 770 (1767).
Junonia lemonias Moore, *Proc. Zool. Soc.*, p. 698 (1875); Holland, *Trans. Am. Ent. Soc.*, xiv, p. 117 (1887) ; Crowley, *Proc. Zool. Soc.* p. 507 (1900).

f. vern. *lemonias* L.

Interior, May, five ♂ ♂, July, one ♂ ; Nodoa, August, two ♂ ♂ ; Five Finger Mountains, April, one ♂ ; Hoihow, April-December, one ♀.

f. aest. *aonis* Cram.

Pap. aonis Cram., "Pap. Exot." i, p. 55, pl. xxxv, fig. D-F (1775) (China).

Interior, May, two ♀ ♀, December, one ♂ (extreme form with underside mostly reddish-brown and markings obsolete) ; Five Finger Mountains, Namfung, March, one ♂, May, one ♀ ; Hoihow, April-December, one ♂.

96. Precis orithya orithya L.

Pap. orithya Linn., *Syst. Nat.*, x, p. 473 (1758), xii, p. 770 (1767).
Precis orithya hainanensis Fruhst., Seitz' "Macrolep.," ix, p. 522 (1912) (Hainan).
Junonia orithya Holland, *Trans. Amer. Ent. Soc.* xiv, p. 117 (1887).

Interior, April, one ♀, May, one ♂, June, one ♀, no date, two ♂♂; Nodoa, August, one ♀; Hoihow, June, four ♂♂, August, one ♂, one ♀.

The typically dry form is represented by one ♀ taken in June.

The so-called race *hainanensis* Fruh. is purely imaginary.

97. **Precis hierta hierta** Fbr.

Pap. hierta Fabr., *Ent. Syst. Suppl.*, p. 424 (1798).

Junonia oenone Moore (nec Cram.), *Proc. Zool. Soc.*, p. 698 (1878).

Junonia hierta Holland, *Trans. Amer. Ent. Soc.*, xiv. p. 117 (1887).

Interior, June, two ♂♂, November, one ♂, one ♀; Leanui, wet month, one ♂; Hoihow, May, one ♂; Nodoa, August, one ♂.

98. **Pyrameis cardui cardui** Linn.

Pap. cardui Linn., *Syst. Nat.*, x, p. 475 (1758).

Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 117 (1887).

Mr. Bowring did not send this species.

Dr. Holland remarks, l.c., p. 117: "The primal decree on account of sin was, that the earth should bear 'thorns and thistles,' and so wherever there is earth there are thistles, and wherever there are thistles there is the thistle butterfly."

*99. **Pyrameis indica indica** Herbst.

Pap. atalanta indica Herbst., *Nat. Schmett.*, vii, p. 171, pl. clxxx, figs. 1, 2 (1794).

Interior, March, one ♀, April, one ♂, one ♀.

100. **Vanessa canace charonia** Drury.

Pap. charonia Drury. "Ill Exot. Ent.," i, pl. xv, figs. 1, 2 (1773).

Vanessa charonia Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 116 (1887).

Five Finger Mountains, Namfung, March, one ♂; Hoplohr dist., April, one ♂, one ♀.

*101. **Symbrenthia hippoclus lucina** Cram.

Pap. lucina Cramer, "Pap. Exot.," iv, p. 82, pl. cccxxx, figs. E, F (1780) (China) (dry season form).

S. khasiana Moore, *Proc. Zool. Soc.*, p. 569 (1874) (Khasias) (wet season form).

In Seitz' "Macrolep." ix, p. 529, Fruhstorfer retains names for the Indian forms. We can find no difference between Hainan, Ichang Assam and Sikkim specimens. Fruhstorfer does not distinguish between *khasiana* Moore and *lucina* Cram. There is no distinction except that of season. The name *daruka* Moore is untenable, referring merely to paler specimens of the dry form *lucina*.

Interior, May, one ♂, one ♀; Five Finger Mountains, Daidip River, April, one ♂, one ♀ (♀ dry form); Five Finger Mountains, May, two ♂ ♂, April, one ♀; Hoihow, June, one ♀, July, one ♀ (dry form).

*102. **Symbrenthia hypselis cotanda** Moore.

S. cotanda Moore, *Proc. Zool. Soc.*, p. 569, pl. lxvi, fig. 9 ♂ (1874) (Darjeeling).

Five Finger Mountains, May, one ♂, June, one ♀.

103. **Yoma sabina vasuki** Doh.

Yoma vasuki Doh., *Journ. As. Soc. Bengal*, p. 259 (1886) (Burma).

Yoma vasuki Crowley, *Proc. Zool. Soc.*, p. 507 (1900).

Interior, May, one ♂, July, one ♂; Yulinkang, no date, two ♂ ♂; Hoihow, no date, one ♂.

*104. **Hypolimnas misippus** Linn.

Pap. misippus, Linn. Mus. Ulr., p. 264 (1764).

Interior, April, one ♂, September, two ♂ ♂; Nodoa, August, two ♂ ♂.

♀ f. *diocippus* Cram.

"Pap. Exot.," i, p. 44, pl. xxviii, figs. B, C (1775) (Batavia).

Interior, September, three ♀ ♀.

105. **Hypolimnas bolina kezia** Butl.

Diadema kezia Butl., *Proc. Zool. Soc.*, p. 812 (1877) (Formosa).

Diadema avia Moore, *Proc. Zool. Soc.*, p. 699 (1878) ♀.

Interior, May, three ♀ ♀, July, one ♀, August, one ♀, September, one ♂, no date, one ♂ one ♀; Hoihow, no date, one ♂.

One ♂ (no date) is a marked dry season form with the underside having the subapical band of the fore wing obsolete, and the discal band of the hind wing absent.

The ♀ ♀ are a bit larger and have more extended white markings than in Formosan specimens, but the difference seems hardly sufficient to justify any racial distinction, and much more material would be necessary.

*106. **Doleschallia bisaltide continentalis Fruh.**

Berl. Ent. Zeit., xliv, p. 279 (1899) (India).

Interior, March, one ♂, April, one ♂, one ♀, May, one ♂, two ♀ ♀, June, four ♀ ♀, July, one ♂, one ♀, September, one ♀, no date, one ♂, three ♀ ♀; Yulinkang, no date, one ♀; Hoihow, August, two ♂ ♂, one ♀.

*107. **Kallima inachis alicia J. and T.**

Joicey and Talbot, BULL. HILL MUS., i, p. 170, pl. xxi, fig. 9 (1921) (Hainan).

Five Finger Mountains, 5,000 ft., June, 1920, one ♂.

*108. **Stibochiona nicea nicea Gray.**

Adolias nicea Grey, "Lep. Ins. Nepal," p. 13, pl. xii, fig. 1 (1833-46) (Nepal).

Five Finger Mountains, June, 5,000 feet, one ♂, May, one ♀.

*109. **Cyrestis periander vatinia Fruh.**

Soc. Entom., 16, p. 97 (1901) (Tonkin).

Interior, April, eight ♂ ♂, September, one ♀.

110. **Cyrestis cocles cocles Fbr.**

Pap. cocles Fbr. "Mant. Ins." 2, p. 7 (1797).

Pap. cocles Moore, *Proc. Zool. Soc.*, p. 698 (1878).

Pap. cocles Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 117 (1887).

Interior, October, one ♀, no date, two ♂ ♂, March, one ♂.

111. **Cyrestis thyodamas thyodamas Bdv.**

In Cuv. Reg. Anim. Ins. (2), pl. cxxxviii, fig. 4 (1836).

Moore, *Proc. Zool. Soc.*, p. 698 (1878).

Crowley, *Proc. Zool. Soc.*, p. 507 (1900).

Interior, March, one ♂, April, ten ♂ ♂, May, three ♂ ♂, December, one ♀, no date, one ♂.

*112. **Chersonesia risa risa Doubl.**

Cyrestis risa D. "Gen. Diurn. Lep.," p. 262, pl. xxxii, fig. 4 (1850).

Interior, April, one ♂, August, one ♂, one ♀, September, three ♂ ♂, two ♀ ♀, October, one ♂, November, one ♂, December, one ♂, two ♀ ♀; Five Finger Mountains, 4,000 feet, June, two ♀ ♀.

113. **Rahinda hordonia rihodina** Moore.

Neptis rihodina Moore, *Proc. Zool. Soc.*, p. 698 (1878) (Hainan).

N. hordonia Holland (nec Stoll.), *Trans. Amer. Ent. Soc.*, xiv, p. 118 (1887).

Rahinda hordonia Crowley (nec Stoll.), *Proc. Zool. Soc.*, p. 507 (1900).

Interior, April, one ♀, May, two ♂ ♂, one ♀, June, one ♂, July, one ♂, August, four ♂ ♂, September, one ♂, two ♀ ♀, October, two ♂ ♂, November, one ♀, December, one ♂; Five Finger Mountains, May, one ♀; Leanui, wet month, one ♂.

114. **Neptis hylas hainana** Moore.

N. hainana Moore, *Proc. Zool. Soc.*, p. 697 (1878) (Hainan).

N. eurynome Holland (nec Westw.), *Trans. Amer. Ent. Soc.*, xiv, p. 118 (1887).

N. eurynome Crowley, *Proc. Zool. Soc.*, p. 507 (1900).

Interior, March, one ♂, one ♀, April, two ♂ ♂, May, five ♂ ♂, one ♀, June, four ♂ ♂, July, two ♂ ♂, three ♀ ♀, August, six ♂ ♂, six ♀ ♀, September, eight ♂ ♂, five ♀ ♀, December, ten ♂ ♂, four ♀ ♀, March-December, one ♂, no date, one ♂, two ♀ ♀; Leanui, wet month, one ♀; Five Finger Mountains, Namfung, March, one ♂; Hoihow, May, one ♂, June, two ♀ ♀, July, one ♂, August, one ♂.

115. **Neptis nandina micromegethes** Holl.

N. micromegethes Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 118 (1887) (Hainan).

N. leuconota Crowley (nec Butl.), *Proc. Zool. Soc.*, p. 507 (1900).

Interior, April, one ♂, one ♀, May, two ♂ ♂, two ♀ ♀, July, one ♀, August, one ♀, September, one ♂, three ♀ ♀, no date, one ♀; Nodoa, August, one ♂.

This race is omitted from Seitz' "Macrolepidoptera."

*116. **Neptis soma** Moore **candida** Joicey and Talb.

Bull. Hill Mus., i, part 2, p. 353 (1922) (Hainan).

Interior, September, one ♂, two ♀ ♀ (♂ Holotype), August, one ♀ (Allotype), July, two ♂ ♂, one ♀; In Hope Mus., Interior, July, one ♀.

*117. **Neptis columella columella** Cram.

" Pap. Exot.," iv, p. 15, pl. ccxcvi, A.B. (1780) (China).
N. ophiana Holland (nec Moore), *Trans. Amer. Ent. Soc.*, xiv, p. 118 (1887).
Interior, March, one ♂, April, one ♀, May, one ♀, September, one ♂, one ♀, October, one ♀, December, one ♂.

*118. **Neptis miah nolana** Druce.

Proc. Zool. Soc., p. 105 (1874) (Siam).
Yulinkang, May, one ♀.

119. **Pantoporia perius perius** Linn.

Pap. perius Linnaeus, *Syst. Nat.*, x, p. 471 (1758) (India).
Athyma leucothoe Moore, *Proc. Zool. Soc.*, p. 687 (1878).
Interior, May, three ♂ ♂, one ♀, July, one ♂, August, two ♀ ♀, September, seven ♂ ♂, seven ♀ ♀, November, one ♂, December, three ♂ ♂; Hoihow, November, one ♀.

*120. **Pantoporia asura asura** Moore.

Athyma asura Moore, Cat. Lep. E.I.C., p. 171, pl. v, fig. 1 (1857) (North India).
Interior, March, one ♂, May, one ♂, one ♀, August, one ♂, September, one ♂; Five Finger Mountains, June, one ♂.
All these specimens represent the wet season form.

121. **Pantoporia selenophora leucophryne** Fruh.

Seitz' " Macrolep.," ix, p. 631 (1912) (Hainan, Hong-Kong).
Interior, May, one ♂, July, one ♂, December, two ♂ ♂; Nodoa, August, one ♂, one ♀; Five Finger Mountains, May, one ♀.

*122. **Pantoporia zeroca** Moore **meinippus** Fruh.

Seitz' " Macrolep.," ix, p. 632 (1912) (Tonkin).

♀ f. *tenuifascia* Fruh.

P. nefte, ♀ f. *tenuifascia*, *Wien. Verh. zool.-bot. Ges.*, p. 414 (1906).
Seitz' " Macrolep.," ix, p. 632, pl. 124b.
Five Finger Mountains, May, one. This agrees exactly with the figure in Seitz.

*123. **Pantoporia cama cama** Moore.

Athyma cama Moore, Cat. Lep. E. I. C., p. 174, pl. v, fig. 5, ♂, ♀ (1857) (Darjeeling).

f. vern. *cama* Moore.

Interior, September, one ♂, one ♀.

*124. **Pantoporia nefte asita** Moore.

Athyma asita Moore, *Proc. Zool. Soc.*, p. 13 (1858) (? North India).

Interior, May, one ♂, June, one ♂, July, three ♀ ♀, August, one ♂, two ♀ ♀, September, one ♂, six ♀ ♀, October, one ♂, November, one ♂.

*125. **Pantoporia sulpitia sulpitia** Cram.

Pap. sulpitia Cram. "Pap. Ex.," iii, p. 37 (1779) (China), pl. ccxiv, fig. E.

Interior, March, one ♂, one ♀, April, one ♂, June, one ♂, one ♀, July, three ♂ ♂, August, three ♂ ♂, September, one ♂, October, one ♂; Leanui, wet month, one ♂.

*126. **Limenitis dudu hainanensis** J. and T.

Joicey and Talbot, BULL. HILL MUS., i, p. 170 (1921) (Hainan).

Five Finger Mountains, Fansa, 5,000 feet, June, 1920, one ♀.

*127. **Limenitis procris procris** Cram.

"Pap. Exot.," ii, p. 15, pl. cvi, fig. E, F (1777) (China).

Interior, August, one ♂, September, one ♂, three ♀ ♀, October, one ♂; Five Finger Mountains, June, one ♀.

128. **Euthalia julii aridaya** Fruh.

Seitz' "Macrolep." ix, p. 657 (1913) (Hainan).

E. xiphiones Holland (nec Butl.), *Trans. Amer. Ent. Soc.*, xiv, p. 119 (1887).

Interior, June, one ♂, July, one ♀, September, one ♂, four ♀ ♀, November, one ♀, no date, two ♂ ♂. Five Finger Mountains, 5,000 feet, May, one ♀, June, two ♂ ♂, one ♀; Fansa, south-west slope, June, one ♀.

128A. **Euthalia telchinia** Mén. **fuscomarginata** subsp. nov.

♂. Fore wing above rather dark, and markings indistinct. Basal pale bands narrower than in typical form; discocellular patch dusted with dark green; no pale subapical patch, but a small spot of dark green dusting near costa. Hind wing with the outer margin narrowly edged with dark ground-colour to about twice the width of the dark linear edge of the typical form.

Underside as in typical form, but the two postdiscal lines on fore wing closer together, the outer one being more heavily marked in its posterior half.

Described from: Interior, September, one ♂ (type), March, one ♂, August, one ♂; Leanui, wet month, end of summer, 1920, one ♂; Five Finger Mountains, near Fahu-Ja, 5,000 feet, June 13, 1920 (W. Young Chun), one ♂.

129. **Euthalia whiteheadi** Crowley.

Kirontisa whiteheadi Crowley, *Proc. Zool. Soc.*, p. 506, pl. xxxv, fig. 4 (1900) (Hainan) ♂, ♀.

E. vacillaria ab. *niepelti* Strand, "Lep. Niep.," ii, p. 9, pl. xiv, fig. 2 (1916) (Loc. ?).

(The type of *niepelti* is in the Joicey collection.)

Interior, March, one ♂, May, three ♂♂, one ♀, July, one ♂, two ♀♀, August, one ♂, one ♀, September, four ♂♂, ten ♀♀, Leanui, wet month, one ♂; Five Finger Mountains, south-west slope, June, one ♂, one ♀; near Fahu-Ja, 5,000 feet, July 12, 1920, one ♂; Sui Mahn Doorg, south slope, June, one ♀.

*130. **Euthalia kesava kis** J. and T.

Joicey and Talbot, BULL. HILL MUS., i, p. 170 (1921) (Hainan).

Nora kesava Crowley (nec Moore), *Proc. Zool. Soc.*, p. 507 (1900).

A series of both sexes from the interior in July, August, September and November.

131. **Euthalia garuda aditha** Fruh.

Seitz' "Macrolep.," ix, p. 667 (1913) (Hainan).

Interior, May, one ♂, one ♀, June, two ♂♂, one ♀, August, one ♀, September, five ♂♂, two ♀♀, October, one ♀.

132. **Euthalia lubentina lubentina** Cram.

"Pap. Exot.," ii, p. 92, pl. clv, figs. C, D (1777) (China).

Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 119 (1887).

In the Hope Museum, presented by Mr. Bowring, one ♀ from the interior, no date.

133. **Euthalia evelina gasvena** Fruh.

Seitz' "Macrolep.," ix, p. 685 (1913) (Hainan).

Dophla derma Crowley (nec Koll.), *Proc. Zool. Soc.*, p. 507 (1900).

Interior, September, two ♂ ♂, one ♀; Leanui, wet month, one ♂; Yulinkang, April, one ♂; Five Finger Mountains, May, one ♀, June, one ♀; north slope, 5,000 feet, June, one ♀.

134. **Euthalia (Adolias) dirtea pardalis** Moore.

Symphaedra pardalis Moore, *Proc. Zool. Soc.*, p. 699 (1878) (Hainan).

S. dirtea Holland (nec Fabr.), *Trans. Amer. Ent. Soc.*, xiv, p. 119 (1887).

A. eleanor Crowley (nec Fruh.), *Proc. Zool. Soc.*, p. 506 (1900).

Interior, March, four ♂ ♂, five ♀ ♀, April, one ♂, May, seven ♂ ♂, seven ♀ ♀, July, two ♂ ♂, one ♀, September, two ♂ ♂, four ♀ ♀, November, one ♂, one ♀; Yulinkang, September, ♂, ♀, no date, one ♀; Leanui, wet month, two ♂ ♂; Five Finger Mountains, April, one ♀, May, one ♀; S.W. slope, June, one ♂; Sui Mahn Doorg, south slope, June, one ♂.

135. **Apatura parisatis parisatis** Westw..

"Gen. Diurn. Lep.," p. 305 (1850) (N. India).

A. parisatis hainana Fruh., Seitz' "Macrolep.," ix, p. 698 (1913) (Hainan).

A. parisatis staurakius Fruh., l.c., p. 698 (1913) (Hong-Kong).

We cannot distinguish either sex of the Hainan specimens from N. Indian ones, nor from Hong-Kong examples. We have no specimens from Tonkin nor Siam, but these will probably prove to vary in the same way as specimens of the typical form.

Fruhstorfer bases his *hainana* on two ♂ ♂ of the rainy season, surely insufficient material on which to found racial differences.

Interior, June, one ♀, August, two ♂ ♂, one ♀, October, one ♂; Five Finger Mountains, May, three ♂ ♂, one ♀, June, one ♂, one ♀.

The ♀ ♀ are represented by two pale forms and two dark ones. The former were taken, one in May and one in June, the dark form in June and August.

136. **Apatura ambica ambica** Koll.

Hugel's Kaschmir, iv, pt. 2, p. 431, pl. viii, figs. 3, 4 (1844).

A. namouna Doubl., *Ann. Mag. Nat. Hist.* (1), 16, p. 178 (1845) (Sikkim).

A. ambica namouna Fruh., Seitz' "Macrolep.," ix, p. 700 (1913).

A. ambica garlanda Fruh., l.c., p. 700 (1913) (Upper Burma, Shan States).

We are not certain whether Siam and Tonkin specimens are sufficiently distinct to rank as races, *vide* Fruhstorfer, l.c. A ♂ in the Joicey Collection from Upper Tonkin does not differ from Indian examples, and we cannot help thinking that the form figured in Seitz as *claribella* Fruh., is another example of individual variation so often seen in *Apatura*.

Five Finger Mountains, June, 5,000 feet, one ♂.

137. **Eulaceura osteria sitarama** Fruh.

Seitz' "Macrolep.," ix, p. 702 (1913) (Hainan) ♂.

Joicey and Talbot, Bull. Hill Museum, i, p. 171, pl. xxi, fig. 10 ♂; pl. xxii, fig. 11, ♀ (1921).

A series of ♂ ♂ collected in the interior in May, June, August and September, and one ♀ in August.

138. **Hestina nama** Doubl. **melanoides** J. and T.

Joicey and Talbot, Bull. Hill Museum, i, p. 171 (1921) (Hainan).

H. nama Crowley (nec Doubl.), *Proc. Zool. Soc.*, p. 506 (1900).

Five Finger Mountains, May, 1920, three ♂ ♂.

***139. Herona marathus marathus** Doubl.

"Gen. Diurn. Lep.," pl. xli, fig. 3 (1848) (N. India).

Interior, April, one ♂, July, one ♀, September, one ♂, two ♀ ♀; Yulinkang, no date, one ♂; Nodoa, August, one ♂, one ♀. Five Finger Mountains, June, one ♂.

*140. **Euripus halitherses halitherses** Doubl.

"Gen. Diurn. Lep.," pl. xli, fig. 2, ♂ (1848) (N. India).

Five Finger Mountains, May, one ♂ (markings pale buff).

Interior, September, one ♂ (markings pale buff); July, one ♂ (markings white).

♀ f. *isa* Moore.

Hestina isa Moore, Cat. Lep. Mus. E.I.C., i, p. 161 (1857).

Moore, "Lep. Ind.," iii, p. 41, pl. cciii, figs. 1 *b*, *c*, *d*, *e* (1896), (Sikkim, Assam).

Interior, July, one, August, one.

These specimens have a broader band on the fore wing and narrower dark border to the hind wing than the form represented by figs. *d*, *e* in "Lep. Ind."

The Euploeine model *diocletianus* L., has not been recorded from Hainan but it may be found when more collecting is done.

♀ f. *cinnamomeus* Wood-Mas.

Journ. Asiatic Soc., Beng., p. 272, pl. iv, fig. 4 (1881).

Interior, April, one, September, one.

*141. **Eulepis athamas athamas** Drury.

Pap. athamas, "Ill. Exot. Ent.," i, pl. ii, fig. 4 (1773).

Interior, May, one ♂, July, one ♂, August, one ♂, October, one ♂.

142. **Eulepis eudamippus whiteheadi** Crowley.

Eulepis whiteheadi Crowley, *Proc. Zool. Soc.*, p. 500, pl. xxxv, fig. 1, ♂ (1900) (Hainan).

Mr. Bowring did not obtain this species.

*143. **Eulepis nepenthes** Smith.

Charaxes nepenthes Grose-Smith, *Ent. Mo. Mag.*, xx, p. 58 (1883) (Siam).

Interior, June, one ♂, September, one ♂, October, one ♂; Nodoa, August, one ♂.

*144. **Charaxes polyxena paris** J. and T.

Joicey and Talbot, Bull. Hill Mus., i, p. 171, pl. xxii, figs. 12, 13 (1921) (Hainan).

Interior, September, one ♂.

*145. **Charaxes marmax bowringi** J. and T.

Joicey and Talbot, BULL. HILL MUS., i, p. 172, pl. xxii, figs. 14, 15 (1921) (Hainan).

Interior, June, one ♂, July, one ♀.

*146. **Charaxes aristogiton indefinita** J. and T.

Joicey and Talbot, BULL. HILL MUS., i, p. 172, pl. xxii, fig. 16, pl. xxiii, fig. 17 (1921) (Hainan).

Interior, July, 1920, one ♂.

147. **Libythea myrrha sanguinalis** Fruh.

L. myrrha sanguinalis Fruh., *Berl. Ent. Zeit.*, xliii, p. 169 (1898) (Himalaya and Malacca).

L. myrrha Crowley (nec Godt.), *Proc. Zool. Soc.*, p. 505 (1900).

Interior, April, four ♂ ♂; Five Finger Mountains, April, one ♂, May, five ♂ ♂.

NEW FORMS OF RHOPALOCERA IN THE HILL MUSEUM.

BY J. J. JOICEY AND G. TALBOT.

Family PIERIDAE.

1. *Anaphaeis java* Sparrm. **nigrita** subsp. nov.

♂, ♀. A well-defined race from the New Hebrides, New Caledonia and Loyalty Is. It partakes more of the colouring of the macromalayan forms. Much broader black margins on both wings of ♂ than in the Australian form, and with reduced spots. Underside of ♂ in two patterns, the more common one being without any discal markings on the hind wing. The other form has discal markings as in other Pacific forms, but much reduced.

♀. Similar to the Australian ♀. Hind wing basal area more sharply defined. Fore wing below either yellow or white in proximal half; hind wing without discal markings.

A series of both sexes from New Hebrides and New Caledonia. Also one ♂, three ♀♀ from the Loyalty Is. Type ♂ from New Hebrides, Type ♀ from New Caledonia.

2. *Appias paulina* Cram. **argentifera** subsp. nov.

♂. Not distinguishable from *caledonica* Feld. with discal spots and apical black on fore wing. Underside a little paler.

♀. Similar to *manaia* Hopk. from Samoa, but fore wing nearly white, and submarginal spots white. Underside with margin of fore wing silvery-grey extending narrowly to outer angle. Hind wing margin silvery-grey with but a trace of dark scaling on its edge.

Habitat.—Loyalty Is., two ♂♂ (Lifu), one ♀.

3. *Ixias ludekingi* Voll. ab. **nigrobasalis** ab. nov.

♂. Fore wing above with basal area strongly dusted with black scales. This area reached very slightly into the base of cellule 2, so that the area of ground colour which divides the basal area from the yellow band is much broader than in the typical form.

The underside is much more strongly speckled with brown than in the typical form.

One ♂ from Padang Pandjang, South Sumatra, ex coll. Schmidt.

The species is very constant in pattern and no local form has so far been made known. The very rare ♀ is not yet contained in the Hill Mus. coll.

4. *Ixias venilia* Godt. ♀ f. **kangeanensis** f. nov.

Not different in pattern from typical ♀ ♀ which occur with it, but upperside white except in two specimens which have some slight orange scaling on the subcostal stripe.

Variation is noted in the tendency for the black cell-stripe to be continued in cellule 4, and for the distal spot in 3 to become separated from the postcellular stripe.

Underside white or tinged with brown.

Habitat.—Kangean Island, four ♀ ♀. Also a series of ♂ ♂ and three ♀ ♀ of the typical form. In Mus. Leiden are two similar ♀ ♀ from Java.

5. *Pereute callinira* Stgr. **ecuadorensis** subsp. nov.

♂. With narrower band than in forms from Peru, Bolivia and Colombia. Band of fore wing shaped as in typical specimens from Peru, but always much narrower. Similar to specimens from North Peru but the lower spot of the band is smaller than it is in these.

Habitat.—South Ecuador, Loja District, twelve ♂ ♂.

In Seitz, v, p. 66, Rober makes the mistake of saying that the antennae are black in this species; they are white.

6. *Pereute callinice* Feld. **numbalensis** subsp. nov.

♂. The band of the fore wing is longer than in the Peruvian form, the stripes in 2 and 3 being extended nearer to the margin.

Habitat.—South Ecuador, Numbala River, August, 1885 (Abbé Gaujon), three ♂ ♂.

7. *Pereute charops* Bdv. f. **nigricans** f. nov.

♂. The extreme dark form of this species in which the grey scaling on both wings is reduced as in the darkest specimens of the Cauca Valley form.

Described from two ♂ ♂ from Guatemala. Type from Palin. 1,500 feet, December 5, 1912, A. Hall.

8. *Leptophobia eleone* D. and H. f. **latifascia** f. nov.

♂ ♀. Fore wing above with narrow black margin, and reduced costal stripe. Therefore the yellow area shows no definite constriction.

A series from North Peru and South Ecuador. The typical form occurs with it.

This variation is still further extended in the race *diaguita* Jorg. from Paraguay.

Types ♂ ♀ from Ayabaca Mountains, North Peru, A. E. Pratt, 1912.

9. *Itaballia calydonia* Bdv. **centralis** subsp. nov.

♂. Fore wing above with black margin slightly reduced. Hind wing with a thin marginal line which though thicker in some specimens is not more than half the breadth of the margin in the typical form occurring in Colombia, Venezuela, and the Antilles.

♀. With a much broader white subapical band and narrower margin on the hind wing than in typical ♀. One from Panama has a broad border on the hind wing.

Habitat.—Central America: Costa Rica, one ♂, two ♀ ♀ (♀ A. T.), Guatemala (Schaus and Barnes), three ♂ ♂; Quiriqua, Guatemala, 4,000-5,000 feet, Nov. (Schaus and Barnes), one ♂ (H. T.); Panama, two ♂ ♂, one ♀.

10. *Pieris philoma* Hew. **pastaza** subsp. nov.

♂. Lighter in colour than the typical form of which we possess four specimens from Chanchamayo and La Merced, Peru, agreeing with the fig. in Seitz, v, pl. XIXc.

Fore wing subapical spot broader, cell-stripe longer and broader, discal spot in 3 strongly marked. Hind wing with posterior bluish scaling extended to the margin as far as vein 4, the white area also extended into cellules 2 and 3.

♀. As in the ♂ but with broader brown marginal areas.

Habitat.—Rio Pastaza, East Ecuador: El Rosario, 4,900 feet, M. G. Palmer, two ♂ ♂, two ♀ ♀ (♀ A. T.); El Topo, 4,200 feet, M. G. Palmer, two ♂ ♂ (♂ H. T.); Alpayacu, 3,600 feet, M. G. Palmer, three ♂ ♂; La Victoria, 3,500 feet, M. G. Palmer, two ♂ ♂; also one ♂ "Ecuador" ex Coll. Smith.

11. *Pieris mandela* Feld. **decorata** subsp. nov.

Compared with *tithoreides* Butl. from Ecuador.

♂. Both wings with broader black margins. Tooth on vein 3 more strongly pronounced, and with stripe in 2 shorter. Two short white streaks at the outer angle. Vestige of a black discocellular line which is however strongly marked in one specimen. Hind wing with broad black margin forming teeth on veins 4 and 5, and its edge not clearly defined below vein 4. A submarginal row of five strongly-marked white streaks.

Underside with the fore wing characters accentuated. A prominent tooth on vein 3 and discocellular mark more pronounced.

Hind wing darker than in *tithoreides*, and the submarginal streaks white instead of yellow.

Habitat.—North Peru: West slopes of Andes, 4,000 feet, June, A. F. Pratt, two ♂ ♂ (H.T.); Tabaconas River, 6,000 feet, A. E. and F. Pratt, one ♂.

12. *Pieris mandela* **interposita** subsp. nov.

This form is intermediate between *decorata* and *tithoreides.*

♂. Fore wing above more as in *tithoreides* but the black distal area is much narrower. Hind wing above as in *decorata* but the submarginal white streaks as in *tithoreides.*

Fore wing below with a strong tooth on vein 3 as in *decorata.* Hind wing below with the brown subcostal patch not distinct as in the two allied forms, but merged into the basal area which is similarly brown.

Habitat.—North Peru: River Chinchipe, 6,000 feet, September, 1912, A. E. Pratt, one ♂; Charape, June, 1912, A. E. Pratt, one ♂ (Type).

13. *Pieris mandela* **maranonensis** subsp. nov.

Resembles *permagna* Fruh. from Peru and Upper Amazon. Fore wing above has the black margin broader below vein 4. Hind wing above has the black margin broader and more distinctly defined, and forming distinct teeth on veins 4—6. In six specimens the margin is as broad or broader than in *tithoreides.*

Underside of hind wing with whitish discal area as in *permagna.*

Habitat.—North Peru: Rentema Falls, Upper Maranon, 1,000 feet, A. E. Pratt, eight ♂ ♂.

Family NYMPHALIDAE.

14. *Cymothoe* **magnus** sp. nov.

This form is allied to *sangaris* Godt., and may possibly be a race, but as it occurs in the northern Congo forest area, and the typical form is found in Kivu and the Kasai, we venture to treat the present form as a species.

The group of red Cymothoe is a very difficult one to understand. The markings of the underside are variable and rarely present any constant character.

♂. Larger than any *sangaris* form, or other red species. Fore wing measures 37 mm. as against the 34 mm. of a large *sangaris*. No difference in colour or markings of upperside from *sangaris*.

Underside colouring as in *sangaris*, but the fore wing cell-spots and discal band, and anterior half of hind wing discal band, much paler brown and therefore well-defined.

♀. Fore wing measures 44 mm. except one specimen of 40 mm., which is no larger than *sangaris* ♀, and is not typical of *magnus* ♀. It may belong to *sangaris*.

Basal areas of both wings reddish-brown, on the fore wing extending little beyond cellule 2, and on the hind wing limited by the postdiscal line. Distal areas of both wings pure white with markings as in *sangaris*, but postdiscal line on fore wing weak between veins 2—6, and the zigzag double submarginal line on both wings is broader and less well defined. Hind wing discal band with the costal part white and strongly marked.

Underside paler than above, and the outer white area sharply defined by the reddish discal lines.

This ♀ approaches the *sangaris* form *pallida* Schultz.

The other specimen referred to above has more extended red and less white, especially on the hind wing. The five white spots of the discal band on fore wing are however large and well-marked.

Genitalia.—Allied to *sangaris* but two specimens examined show the same structure as distinct from *sangaris*. Both species with a lobe or flap on the valve. The edge of this flap is irregularly serrated along the broader middle part of the lobe. This edge produces three processes. In *sangaris* the lower of these three processes is produced to a long tooth, whereas in *magnus* it forms a shorter and strongly bifurcated tooth. Moreover in *magnus* the whole lobe is broader and reaches much nearer the outer edge of the valve than it does in *sangaris*.

Unimportant variations occur in the number and size of the teeth on this lobe.

Habitat.—North Congo: Oso-Lowa Watershed, August, 1921, T. A. Barns, three ♂ ♂, two ♀ ♀ (one small ♀) (Types); Kondolola district, Lindi Valley, 1,600 to 1,700 feet, May, 1921, one ♂; Upper Maiko Valley, south side, 2,600 feet, August, 1921, T. A. Barns, one ♂; forest on south side of Uma River, east of Stanleyville, May, 1920, one ♀, T. A. Barns.

We take the opportunity of pointing out that the *sangaris* ♀ form *gerresheimi* Neustt. 1912, sinks to *euthalioides* Kirby, of which the type is in the Hill Museum.

15. *Cymothoe* **infuscata** sp. nov.

A striking species which seems to come near to *egesta* Crm.

♂. Fore wing above pale yellow as in *egesta* with narrow or broad blackish margin. A black inner marginal stripe as in *egesta*, its inner edge more sharply defined; this stripe does not reach vein 3 in a Cameroons specimen, and reaches vein 3 and 4 in two Congo specimens. No outer black stripe as in *egesta*. Hind wing with a postdiscal band which follows the curve of the outer margin. This band is placed more distad than is the straighter band of *egesta*; it is pale and narrow in the two Congo specimens, and in the Cameroons ♂ it is much broader and of same colour as fore wing. Discal blackish band well defined, basal area paler in the Cameroons specimen. Submarginal black line not edged with yellow-brown.

Underside as in the variegated forms of *egesta*, the Congo specimens more strongly irrorated with black. Postdiscal line on both wings not straight but very strongly crenulate. Pale subcostal area on the hind wing smaller and better defined than in *egesta*.

♀. Unlike the ♀ of allied forms. Above fuscous-brown, fore wing paler especially in the apical and distal areas. A black stripe as in the ♂. A postdiscal series of indistinct wedge-shaped spots edged with grey-white. Hind wing with a prominent pale postdiscal band which is about 4 mm. broad and follows the curve of the outer margin. Discal blackish band less marked than in the ♂.

Underside as in the ♂ but paler.

Length of fore wing—♂ 40 mm. ♀ 47 mm.

Habitat.—Congo: West Semliki Valley, 3,500 feet, June, 1924, forest, one ♂ T. A. Barns (Type); Kasai River one ♂. Bitye, Ja River Cameroons, 2,000 feet, dry season, G. L. Bates, one ♂, one ♀; October, wet season, G. L. Bates, one ♀ (Type); Bitye, one ♀.

16. *Cymothoe jodutta* Westw.

The type of this species came from Ashanti, and the name must be restricted to specimens from the Gold Coast (and perhaps still farther south) to French Guinea (and perhaps farther north).

Specimens from the Cameroons and Congo vary in the width of the brown margins, and in the isolation of one or two subapical spots on the fore wing. In no case are the marginal areas broader than in the typical form as stated in Seitz, xiii, p. 152. This form is *ehmckei* Dew.; but this name given to the ♂ must give place to *ciceronis* Ward. The *jodutta* figured on t. 35c is only an intermediate specimen of this race. The ♀ of the typical form is rather different from the broad white-banded ♀ of *ehmckei*. The white bands are reduced almost to lines, and on the fore wing in cellules 2-5 is formed of lunulate marks, and the other white markings are obscured by the fuscous ground-colour. In both sexes of the typical form, the discal line of the hind wing below is placed farther from the cell than in the other race.

Typical *jodutta* in the Hill Museum from French Guinea, four ♂♂, two ♀♀; Cape Coast, three ♂♂, two ♀♀; Lagos, one ♂; Liberia, one ♂; Gold Coast, one ♂, one ♀; Sierra Leone, one ♀.

♀ f. *ciceronis* Ward has broader white bands than the typical female.

♀ f. *seneca* Kirby, of which the type is in the Hill Museum, has still broader bands and is commoner than the other forms.

The oldest name for the Cameroon and Congo race is *ciceronis* Ward, 1874, and therefore *ehmckei* will sink.

17. *Diestogyna* **adumbrata** sp. nov.

Allied to *romi* Auriv., but easily distinguished by the shaded bluish-grey band on the fore wing.

♂. Fore wing above deep greenish-blue, darker in the basal half. Cell with three double blue transverse lines. A discal blackish band from costa to inner margin, its outer edge with a tooth on vein 2, below which it curves inward. A postdiscal bluish-grey band from the subcostal to vein 2 and widening posteriorly; inner edge defined by the black discal band, outer edge not well-defined. Apex and outer margin narrowly black-brown.

Hind wing above deep blue with broad fuscous costal area and darker brown outer and inner margin.

Underside coffee-brown, basal areas darker and defined by the grey-white edging, which is more widely distributed on the fore wing, and condensed to a line on the hind wing.

♀. Similar to *duseni* Auriv. but band of the hind wing yellowish-brown which gradually merges into the ground-colour on the margin. Fore wing with the white spots in 2 and 3 shorter than in *duseni*, being reduced both proximally and distally, and with the inner edge of the spot in 2 in line with the spot above.

Underside as in *duseni* except for the spots of the fore wing as above, and the band of the hind wing being paler than on the upperside.

Length of fore wing—♂ 34·5 mm., ♀ 32·5-39 mm.

Habitat.—East Congo, Kivu district: Middle Lowa Valley, nr. Walikali, 3,000-4,000 feet, forest, February, 1924, wet season, T. A. Barns, one ♂ (Type); Upper Lowa Valley, nr. Masisi, 5,000-6,000 feet, forest and long grass, February, 1924, T. A. Barns, two ♀ ♀ (♀ Type).

18. *Vanessula milca* Hew. **angustifascia** subsp. nov.

The type of *milca* was said to come from "West Africa." Hewitson's figure is of a specimen from the West Coast district, which differs from Cameroons and Congo specimens in the narrower band. We have the typical form from Sierra Leone, Ashanti and the Gold Coast. Between Ashanti and Sierra Leone lies the Ivory Coast where in the interior exists a form with very narrow bands.

♂. The band of the fore wing on vein 2 measures 4-4·5 mm. compared with 5·5-6 mm. in the typical form. Bases of cellules 2 and 3 with extended black ground-colour. Band of the hind wing narrower than in the typical form and not reaching the costa nor inner margin.

Habitat.—Côte d'Ivoire: Bofesso, 15 miles North of Man. 2,000 feet, July 2, 1926, 4 ♂ ♂ (Type); near Danané 1,300 feet, June 13-14, 1926, 1 ♂. All collected by C. L. Collenette.

19. *Vanessula milca* **latifasciata** subsp. nov.

♂, ♀. Band of the fore wing on vein 2, 7-7·5 mm. broad, and entirely broader than in the typical form. Band of the hind wing also broad in proportion.

Habitat.—Cameroons and Congo. In Hill Museum from Bitye Cameroons, Kivu, Ruanda, Semliki and Ituri Forest. Also the Katanga, Rhodesia, Kenya and Uganda. Type ♂ and Type ♀ from Butahu River, Semliki Valley, December, 1919, T. A. Barns.

There is some variation in depth of colour and in the width of the black margin on hind wing.

ACRAEIDAE.

20. *Acraea asboloplintha* Karsch.

A white ♀ form of this species was named by us in the Bull. Hill Mus., i, pt. 2, p. 340, 1922, as *albula*, and previously described by Trimen as the ♀ of his *rubescens* (*Trans. Ent. Soc.*, 1908, p. 547-8).

Dr. Van Someren has pointed out to us that in Kenya all the specimens are of the *rubescens* type, the females being *albula*, except one which has the hind wings rosy pink and patch on fore wing white. It is clear, therefore, that *rubescens* is the East African race and not an aberration in this area as we suggested (loc. cit.). The normal female is *albula* J. and T., the female aberration here being the red form which Suffert described from Nairobi as *asboloplintha*. This red ♀ form must be very rare in East Africa.

On the other hand the *rubescens* race occurs as an aberration in the Kivu district. Mr. Barns obtained one ♂ at 4,000 feet, on the Upper Oso River, February, one ♂ at the Kivu lake in September, and Urindi, August. We have also one ♂ obtained by Major Briggs between Kivu and Lake Edward.

Dr. Van Someren remarks: "Of 80 odd males taken at Meru, Mt. Kenia, all are uniformly of the *rubescens* type, and the ♀ ♀ (15 specimens) are your *albula*. There are no ♂ ♂ approaching the *asboloplintha*. Further, I have recently bred the species in hundreds from known parents, from the forest of the Kikuyu Escarpment; all the males are *rubescens*, and all the females with one exception are *albula*. I have taken the species in dozens on Elgon and round that district and all are typical—none are near the *rubescens* form."

A NEW FORM OF PAPILIO FROM COLOMBIA.

By G. TALBOT, F.E.S.

Papilio ariarthes gayi Luc. f. **albicans** f. nov.

♂. The spots in cellules 2—4 of the hind wing are creamy-white and larger than in the form *gayi*. These spots are mostly tinged slightly with red at their distal ends.

This albinistic tendency is further developed in one specimen which has the distal areas of both wings dusted with white scaling.

The form *gayi* occurred at the same place, and also two specimens of the form *cyamon* Gray.

Habitat.—Colombia: Region of Villavicencio three ♂ ♂ in coll. Mus. Paris. Type labelled "Colombie" in coll. Hill Museum. Also one ♂ from Villavicencio, May 1922 (with smaller spots), and one ♂ Rio Caqueta, S.E. Colombia (showing an intermediate stage) in coll. Hill Museum. The specimens from Villavicencio were taken by Professor Apollinaire-Marie.

A NEW PIERINE FROM KENYA COLONY.

By G. TALBOT.

Pieris margaritacea **somereni** subsp. nov.

A pair of this form was kindly sent me by Dr. Van Someren who was right in thinking it to be unnamed. He possesses a series which is constant. It occurs on Mount Kenya and foothills, also on the Matthews Range.

There exist now three apparent races of *margaritacea* in East Africa, *kenyensis* J. and T., from the Teita district, *margaritacea* Shpe., from Sotik, and *somereni*, from Mount Kenya. The present form is distinguished by the extended orange on the fore wing below. This colour shows through above, particularly in the ♀.

♂. Fore wing above with white basal area not sharply defined along its outer edge; this edge not toothed between veins 2 and 4. Hind wing with outer edge of white area only slightly indented below vein 4. Underside of fore wing with the basal area pale orange, deeper in tint in the cell. Hind wing as in *margaritacea*.

♀. Upperside with basal light areas on both wings reduced, so that there remains a black distal half. Hind wing with basal area grey-white.

Underside of fore wing more strongly orange than in the ♂, but the inner margin is white.

Habitat.—Mount Kenya and Matthews Range. Types ♂, ♀ from Meru, June, 1922. In Hill Museum two ♂♂ labelled "Uganda" and one ♂ labelled "Nairobi" (ex coll. Suffert). One of the two former specimens has the basal area of fore wing pale yellow with cell only orange.

The Hill Museum does not possess any typical *margaritacea*.

A NEW AFRICAN LYCAENID.

By W. HAWKER-SMITH, F.E.S.

Aphnaeus jefferyi sp. nov.

♀, *Upperside.* Fore wing black. The cell and the basal two-thirds of the areas below the cell closely sprinkled with light blue scales as far as vein 3; a spot of the same at the end of the cell. Hind wing black, the inner marginal half sprinkled with light blue, the inner margin grey. The margins on each side of the anal angle chestnut coloured.

Underside. Fore wing pale reddish-brown, paler towards the base, the inner margin greyish-white; a deep red-brown marginal line. Two cell-spots, white with brown suffusion and edged with deep red-brown, one at the base round, the other transverse in the centre of the cell; a similar transverse spot on the discocellulars. Beyond the cell is a band of similarly coloured spots, the three upper ones in line at right angles to the costa separated in cellule 4 from two lower spots which are larger than the upper ones, the posterior spot being slightly curved outwards. Below this spot is an oblique white bar edged with black, more especially along its anterior edge. There is a similarly coloured stripe on the submedian below the cell extending from the base to well beyond the origin of vein 2. Two small subapical spots, one in cellule 6, and a larger one in cellule 4. Hind wing, ground-colour as in fore wing but darker and with similarly coloured spots. A small spot at extreme base of costa; a large subbasal spot in cellule 7, another towards the apex; a rounded spot in the middle of the cell and a larger one on the discocellulars; a spot below placed slightly beyond the origin of vein 2 with a thin red-brown stripe connecting it with the base; a small rounded spot on inner margin. Three anterior postdiscal spots placed just beyond the cell, the upper one nearly touching the costal spot, and the lower one touching vein 4; three posterior postdiscal spots, the upper one placed between the discocellular and the lowest of the three anterior spots, the second one not quite joined to the lowest one by a thin line, this lowest spot rounded and placed near to a bar which runs to the inner margin; a submarginal somewhat diffused red-brown band from costal anal angle, the margin edged with red-brown. Anal lobe red-brown with some metallic bluish-white scaling on its outer and inner edges. A small similarly coloured stripe on the margin just above the anal angle. The fringes of the fore wing fuscous marked with grey-white posteriorly; fringes of hind wing white, fuscous at the veins.

Length of fore wing: 20 mm.

Habitat: Kitale, Kenya, March 2, 1925 (G. W. Jeffery).

Unlike any other species and readily distinguished by its dark spots, none of which have any conspicuous silvery centre, the cell-spots being only slightly iridescent.

NEW HETEROCERA FROM MOROCCO.

ARCTIIDAE. BY G. TALBOT.

NOCTUIDAE. BY MISS A. E. PROUT.

GEOMETRIDAE. BY L. B. PROUT.

THESE were collected by Messrs. Le Cerf and Talbot on their Mission to the Great Atlas Mountains.

ARCTIIDAE.

Ocnogyna joiceyi sp. nov.

Distinct from any known species and distinguished easily by the yellow ground-colour and the broad black margins of the hind wing.

♂. Fore wing above with yellow ground-colour and black and smoky-brown markings. Base with three coalescent black spots; a subbasal row of five black spots separated by the veins, and lying in the yellow ground; a broad black discal band formed of five conjoined spots, constricted between the third and fourth spots below the cell; a postdiscal series of four separated black spots, the second from the costa being the larger and the two lower ones the smaller; broad black submarginal band formed apparently of ten conjoined spots, reaching the margin between veins 4 and 6 and 2 and 3, the rest of the margin being smoky-brown; on the margin in cellules 3 and 6 a small round black spot. All black markings are narrowly edged with yellow, and the costa is yellow; rest of wing, except costa, smoky-brown.

Hind wing yellow with a broad black marginal band from the costa at apex to inner margin at base. A black basal longitudinal stripe reaching vein 2 where it is joined to a narrower black stripe running nearly vertical to the costa; a small black discocellular spot.

Underside yellow with the markings of the fore wing much reduced.

Head and antennae blackish-brown, palpi yellow, collar yellow, thorax blackish-brown, abdomen black ringed with yellow, ventral surface yellow, legs black marked with yellow.

Length of fore wing: 13 mm.

Habitat.—Around east and south-east slopes, 2,000 m., May 31, 1927, one ♂, taken by Le Cerf.

NOCTUIDAE.

HADENINAE.

***Miselia* atlas sp. nov.**

♀. 35 mm.

Palpus, head and thorax grey irrorated with dark brown, the irroration stronger on head and patagia than on thorax and wing-tegulae; abdomen slightly discoloured—apparently pale drab. Fore wing pale buff shaded with grey (especially beyond subterminal line), the area between ante- and postmedial lines distinctly darkened, somewhat as in *contigua* Schiff., but rather more strongly, the insect being altogether darker and colder in tone than *contigua*, which it somewhat resembles in pattern; a curved black streak at base of M (as in *contigua*); dentate subbasal half-line black on proximal edge behind costa, double and black behind M, where the proximal line forms the end of the basal streak; dark shade between subbasal and antemedial lines much stronger than in *contigua*; double antemedial line slightly more oblique (more bent outward to hindmargin), the proximal line weak, the distal black between the veins; orbicular rather narrower and more oblique than in the majority of *contigua* specimens, distinctly shaded at middle; black outline to claviform strong, complete; reniform rather narrower than in *contigua*, especially at anterior end, as well contrasted as the orbicular with the dark ground-colour, with inner grey line (much as in *contigua*); dentate pale mark on and behind M^2, slightly smaller than in *contigua* (less contrasted than in some *contigua* specimens); postmedial line nearly as in *contigua*, but with two dark lunules in fold and one behind SM^2 on its proximal edge, making the line triple behind M^2; subterminal line somewhat as in *contigua*, but dentate at M^2 as well as at R^3 and M^1, neither of the teeth extending to the termen. Hind wing strongly suffused with fuscous except at base and about abdominal margin, the discal lunule and postmedial line (somewhat as in *contigua*) only just discernible. Underside mainly suffused. or irrorated with fuscous; hind wing predominantly whitish to postmedial line (which is strong though diffused), with diffused discal spot; fore wing with indistinct postmedial line.

Habitat.—Tenfecht, 3,000-4,000 feet, dry season, April 30-May 1, one ♀.

Rather shorter and broader-winged than *contigua*. As the thoracic crest is damaged, it is quite impossible to place this species by Hampson's key; it may possibly be more nearly related to *dentina* than to *contigua*, but notwithstanding the shorter wings and different subterminal, it has many points in common with *contigua.* I cannot find that this species has been previously described.

ERASTRIANAE.

Eublemma **symphona** sp. nov.

♂. 28 mm.

Head and thorax pure white; antenna and palpus white shaded with buff (abdomen discoloured). Fore wing pure white delicately shaded with buff, especially beyond postmedial line, where only a postmedial patch on costa, one or two small costal spots and a very fine subterminal line remain white; obsolescent, waved (slightly curved?) subbasal and antemedial pale-buff lines, from about 1½ and 3 mm. costa, hardly traceable at hindmargin; orbicular almost obsolete, two slight dark dots on discocellulars; medial line nearly as in *albida* Dup. but weak, with slight buff irroration on its proximal side, especially in cell and fold; a distinct white band between medial line and post medial, which is bent outward from costa at about 8 mm. from base to SC^5, inwardly oblique (and somewhat bent inward opposite cell) to R^3, thence somewhat incurved to hindmargin at about 6 mm.; apex hardly darker than the rest of termen; subterminal line rather oblique from costa to about R^1, strongly incurved (almost angled) between R^1 and R^3, thence very slightly incurved, ending almost at tornus, a row of minute black dots on its distal edge between the veins; terminal line almost obsolete; fringe proximally pure white except for darkening at costa (as in *respersa*, *albida*, etc.), slightly intersected at the veins with subtriangular dark marks at about two-thirds, followed by a fine white line, the tips darkened. Hind wing almost entirely suffused with pale, shining buff, the base whiter; an obsolescent, diffused medial line from costa at about 4½ mm. to about 4 mm. hindmargin; fringe white with only faint traces of buff spots at two-thirds and at tips, apparently almost pure white throughout on anterior third. Underside of fore wing almost uniformly suffused with pale, shining buff, a darker medial and paler subterminal line just discernible; one or two white costal spots before apex; fringe as above; hind wing paler than above, but reproducing the medial line and broadly irrorated with buff at termen.

Habitat.—Tizi N'Test and Djebel Imress, 2,000-2,450 m., May 11-14, one ♂.

Mr. W. H. T. Tams, to whom we are indebted for his kind assistance in working out these collections, considers this quite distinct from *albida* and all previously-known species of the *albida* group, to which *symphona* undoubtedly belongs.

GEOMETRIDAE.

Eupithecia lecerfi sp. nov.

♂ ♀, 16-20 mm. Face rather smooth, the tuft at lower extremity small. Palpus less than 1½, second joint triangularly scaled. Antennal ciliation in ♂ rather shorter than diameter of shaft. Hind tibia with all spurs well-developed. Head and body concolorous with wings, the tarsi, especially the anterior, in part more or less infuscated, with the ends of the joints remaining pale.

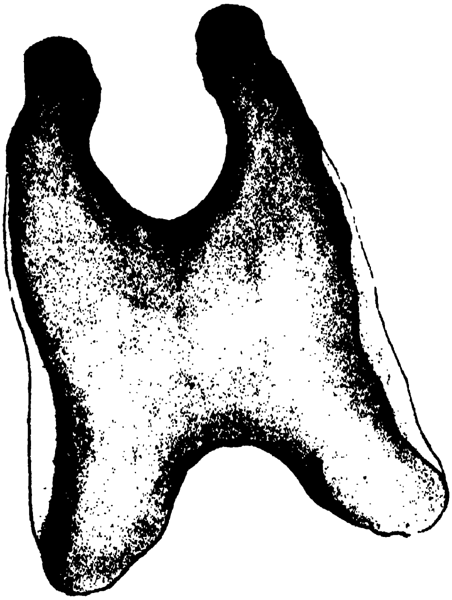


FIG. 1.

Fore wing with areole single; shape and scheme of markings about as in (? *liguriata* Mill. =) *roedcraria* Stndfs., the wings perhaps on an average very slightly broader; the pale ground-colour more strongly irrorated with the warmer brown, producing a tone intermediate towards that of *illuminata* Joan.; lines rather more widely separated at costa (where their thickest part is not black-mixed), almost throughout fairly thick and distinct, the postmedian scarcely inbent before the outward curve; presubmarginal band more greyish, the tawny element in it vestigial. Hind wing with the costal region whiter than in *roederaria*, postmedial line less incurved behind middle.

Underside slightly more distinctly marked than in *roederaria*.

Tinmel (J), fourteen ♂ ♂, eight ♀ ♀, viz.: May 18, one ♂; May 19, nine ♂ ♂, two ♀ ♀; May 20, three ♂ ♂, four ♀ ♀; May 22, one ♀; May 23, one ♂, one ♀. Batna, Algeria (Nelva), two ♂ ♂, one ♀ in Mus. Tring, lighter sandy.

The ♂ genitalia show important differences from those of *roederaria* and *illuminata*, the ventral plate (fig. 1) being of the *centaureata* group; on the sporadic outcropping of this form of ventral plate see Petersen, Iris xxii, pp. 223-303 *passim*, in particular pp. 278-279, on the species subsequently named *subtilis* Dietze, Biol. Eup. 1, t. 80, f. 900 (1910). Unfortunately I only know *deverrata* Dietze, *op. cit.*, p. 40, No. 69, f. 77 (Gafsa, Tunis) from the photographic figure and the author's brief account, both of which suggest *lecerfi* in some points—rather robust build, yellower tone, pale costa of hind wing; but that species—for it can hardly be a form of *roederaria* or *illuminata*—should have one of the hind tibial spurs aborted and the underside almost unmarked, and the only known specimens had apparently a different life cycle, the larvae which were found on *Deverra scoparia* in December lying over in the pupa state until the following October.

It should be added that the *Eupithecia* which Oberthür (Et. Lép. xix, p. 317) records from Mrassine, April and May, 1921, as *roederaria* are mostly in second-rate condition but seem to be forms of *illuminata*, in any case certainly not *lecerfi*; the single example which I have seen from Timhadit, Middle Atlas, September 1920, is probably neither of the species in question, the spurs of the hind tibia being all well-developed, as in *lecerfi*, whereas the wings are appreciably narrower, the postmedian close to the cell-spot, the hind wing darkened and greyish, without whitish costal area.

Diastictis **colpias** sp. nov.

♂ ♀, 23-24 mm. Face and palpus about as in *artesiaria* Schiff. Antenna of ♀ with the joints slightly projecting at extremity; ♂ with the pectinations as long as in *artesiaria*, more slender. ♂ hind tibia without hair-pencil. Head and body concolorous with wings.

Fore wing with termen slightly more waved than in *artesiaria*, but with still less noticeable sinuosity in anterior half; fovea well-developed; cell proportionally a trifle longer than in *artesiaria*; $SC^{1,2}$ long-stalked, their stalk anastomosing or connected with costa, SC^2 with $SC^{3,4}$; pale brownish-grey (sometimes browner) with copious darker and some coarse, almost black irroration; cell-mark slightly elongate, narrower than in *artesiaria*; lines slender, blackish, sometimes thickened at the veins and always a little at costa; antemedian from costa at nearly 3 mm. to hindmargin at 2 mm., nearly direct, faintly excurved near costa and at fold; postmedian arising at least 4 mm. from apex, oblique outward from near costa to a small nose at R^1-R^2, straightish or very slightly incurved behind this; a slight or stronger pale line, edging the postmedian distally; some sometimes weak, sometimes strong, dark wedge-shaped markings outside the postmedian anteriorly, the pair between R^2 and M^1 the strongest; median shade proximal to the cell-spot, somewhat approaching the antemedian posteriorly, sometimes obsolescent except for a costal and a hindmarginal spot; subterminal line fairly thick, wavy, in the strongly marked specimens appearing deeply dentate between the anterior dark wedges, from fold running obliquely outward to tornus; terminal line somewhat interrupted at the veins, more or less crescentic between; fringe strongly dark-spotted at the vein-ends, bisected by a pale line, rather darker proximally than distally. Hind wing with termen crenulate and with a stronger tooth at R^3, shaped more as in *Semiothisa aestimaria* Hb. than in *D. artesiaria*; much more weakly marked than fore wing; a moderate cell-dot; fine and generally weak median and postmedian lines shown in posterior half, the former thickening at abdominal margin; subterminal faintly shown on a slightly more deeply coloured distal area; terminal line and fringe nearly as on fore wing.

Underside rather paler, at least on hind wing; markings weak, excepting (especially on hind wing) the cell-dots; indications of a slightly darkened band proximally to the subterminal; terminal marks weaker than above.

Sinis, Great Atlas, 2,800 feet, at light on plateau, May 6, 1927, type ♀ in coll. Joicey. Rahama Oued, 31 hours S.E. of Mazagan, end of April to May, 1903 (W. Riggenbach), allotype ♂ in coll. Tring Mus., browner than the other specimens.

Quite distinct from any other species known to me, more recalling an unnamed *Obolcola* from the Kikuya Escarpment than any Palaearctic species. Further material from Algeria in the Tring Museum consists of: one ♂ from the Moroccan frontier 15 km. S.W. of Lalla Marnia, May 17, 1914; two ♂ ♂ from Messer, September 12-13; 2 ♀ ♀ from Perrégaux, September and October; and a short series from Sidi-bel-Abbès.

NEW FORMS OF DELIAS (LEP. PIERIDAE).

BY G. TALBOT.

1. *Delias microsticha* Jord. ♀ **f. albifascia** f. nov.

Differs from *microsticha* ♀ below in two important characters:—

The fore wing with an orange-yellow basal area, and the hind wing with a white discal band which is sharply defined with a nearly straight proximal edge and with the outer edge excurved at cellule 4; it is marked with yellow bars, and in specimens from Dutch New Guinea more marked with orange.

Occurs with the typical form in British and Dutch New Guinea. Type from Weyland Mountains, Dutch New Guinea, Mount Kunupi, 6,000 feet, December to January.

2. *Delias flavopicta* Jord. ♀ **f. albifascia** f. nov.

We apply the same name here because the pattern is the same.

It is not certain whether *microsticha* and *flavopicta* are different species, and it is possible that this is a case of polymorphism.

Proximal area of fore wing below pale yellowish-white. Band of the hind wing more white than in the *microsticha* form.

Known only from the Arfak Mountains. Type from Angi Lakes, 6,000 feet, March.

3. *Delias aglaia* **nigrescens** subsp. or forma nov.

♂. Distinguished from other forms of the species by its strongly-reduced grey markings on both wings. On the hind wing the discal band is reduced in the cell to blue-grey dusting which does not extend below the cell. The outer yellow stripe is reduced proximally and at vein 2 does not reach beyond the origin of the vein. Postdiscal stripes short and thin. Hind wing below with the postdiscal stripes in 2 to 4 narrower and farther from the margin than in allied forms; submedian veins entirely black.

A single specimen from "Cochin China." This probably came from Cambodia.

4. *Delias thysbe* **perakana** subsp. nov.

D. pyramus Dist., Rhop. Malay, p. 465; pl. xlii, fig. 14 ♂ (1886) (Perak).

♂. Upperside of fore wing with the cell-mark and distal stripes narrower than in *pyramus* Wall. Hind wing with the cell-mark triangular and not linear as in the allied race, and the distal stripes not extending so near to the margin; the yellow stripe below vein 2 does not reach the margin.

♀. Fore wing above with the mark at upper angle of cell not joined to the discal spot, and the spot at the base of cellule 5 reduced to a mere dot. Hind wing with distal stripe in 6 more extended white proximally; yellow stripes in 3 and 4 with only slight black scaling. Hind wing below with the yellow stripe in 5 distally truncate, not pointed. Fore wing below with stripes in 2 to 4 reaching the margin, and without a distal prolongation; tornal spot broader, placed on the margin, touching the submedian on the margin, and only slightly dusted with black.

Habitat.—Perak, 2,000 to 3,500 feet, W. Doherty, one ♂, ex coll. Druce; Perak, ex coll. Gr.-Smith, one ♀.

5. *Delias* **woodi** sp. nov. (Oberthür, i. l.)

Apparently allied to *ottonia* Semp. but distinct both from this and from *henningia* Esch. Both wings are less elongate and more square than in allied species.

♂. Fore wing above with a narrow white discal band crossing the middle of the cell to the tornus, narrow in the cell and much broader posteriorly. The distal edge of this band is much more sharply defined than the proximal edge, is incurved from costa to before middle of vein 3 and is thence oblique to near margin. An obscure white discocellular dot, and three obscure white streaks in 4 to 6. Hind wing with a yellow discal band from upper edge of cell to inner margin, its proximal edge not defined and basal area dusted with yellow; the whole costal area yellow, a yellowish-white patch at base of cellule 6, with slight white dusting below this vein. Outer edge of discal band sharply defined and incurved between veins 7 and 3, thence excurved and filling the angle of vein 2, and rounded to the inner margin; inner margin yellow to the base. A round white discocellular dot divided by the vein.

Underside of fore wing with discal band more sharply defined; three broad white subapical stripes in 5, 6 and 8 narrowing distad, and an ovate spot in 4; two small rounded white spots in 2 and 3, placed nearer the margin than in allied forms. Hind wing below with a red spot at the base of cellule 7, and another on the inner margin at the base of 1a. A discal and submarginal row of yellow patches. The inner edge of the discal row nearly straight as in allied forms; patch at the base of cellule 6 larger than the one above it, cell-patch large but not reaching end of cell and with an indentation on its outer edge, stripe filling the breadth of cellule 1c and joined to the submarginal spot on either side, leaving a black central spot, stripe in 1b shorter, and a short streak in 1a; a small spot in the base of cellule 2. Submarginal spots large, those in 2 to 6 free though close together, rounded on their proximal and distal edges, longer than broad, those in 2 and 3 slightly tapering proximally. A yellow discocellular spot divided by the vein.

♀. Fore wing above with very broad white discal band, becoming broader posteriorly; outer edge of this band sharply defined, straight from costa to lower angle of cell at vein 4, thence rounded to before the tornus and not quite touching the inner margin where its inner edge is less defined, is excurved to origin of vein 2, thence slightly incurved across the cell. Subapical white streaks as in the ♂. Hind wing with the proximal half yellow and some black ground-colour at base of cell; edge of this yellow area sharply defined, extending to the costa, not reaching end of cell, and filling the base of cellule 2. A yellow discocellular spot.

Underside markings arranged as in the ♂. On the hind wing the four lower discal patches and stripes are partly dusted with black, the cell-patch is deeply constricted at its middle, and the stripe in 1c of the male is here a short patch without any extensions to the submarginal spot.

Length of fore wing—♂ 33·5 mm., ♀ 39·5 mm.

Habitat.—Mindanao (J. Waterstradt, 1903—1904) one ♂ one ♀ coll. Levick ex coll. Oberthür.

The name of "*woodi*" was applied to this insect by Oberthür, but he does not appear to have published any description.

6. *Delias* **schuppi** sp. nov.

A very distinct species allied to *kuehni* Honr., to *dumasi* Roths., and to *vidua* J. and T. It may prove to be the ♂ of *dumasi* of which only one female from Buru is known. This suggestion is supported by the pattern of the underside and the shape of the wings. The rather broad black margin of the hind wing below suggests a *kuehni* form, but its edge is proximally scalloped, the wings are more rounded, and the second and third subcostals of fore wing are shorter than in *kuehni*. The valve and scent-scale are typical of the group, but both are distinct from *kuehni*.

♂. Upperside of fore wing with a narrow black margin from beyond the apex to below vein 2 where it tapers off; this border is extended in cellule 3, reaching to the middle of vein 4, with black dusting to the cell, and only slightly along vein 3. Above vein 4 there is some black dusting extending to the costa and to about midway between cell and margin, leaving two spots of white ground-colour in 5 and 6. The veins distally and at end of cell are black. Fringe black to the submedian, and white along inner edge. Hind wing with narrow (about 3 mm. wide) black distal border from anal angle to middle of cellule 4, and continued as a line to about vein 6; its edge crenulate and not sharply defined.

Underside of fore wing black with markings much as in *dumasi*. Basal area grey with slight yellow tinge below costa. Inner edge white slightly dusted with brown, this area sharply defined just above the submedian fold. A white subcostal spot, its upper part oblong in cellule 8 just beyond the cell, with an extension of the distal edge reaching vein 5. Five subapical spots as in *dumasi*, anterior three yellow, others white. The spot in 6 the larger and slightly narrowed proximally as well as the spot in 8; spots in 7 and 4 very small, the one in 5 rounded.

Hing wing yellow with black distal border broader than in *dumasi* (6 mm. on vein 4) and with smaller marginal yellow spots. The two anterior marginal spots much larger than the others, the upper one projects beyond the next one, and together with the spot in 4 are only separated by the veins; the other spots in 1c, 2 and 3 are rather small, the one in 1c composed of two dots. The edge of the black border is scalloped as in *dumasi* but more strongly. Veins forming the end of the cell scaled with white.

Length of fore wing 35 mm.

Habitat.—Unknown, probably Buru or other island in the Moluccas. A single ♂ in the Munich Museum, ex coll. Hagen.

We are indebted to Baron Dr. von Rosen for the loan of the specimen and for permission to examine the genitalia and scent-scales.

7. *Delias weiskei* **huonensis** subsp. nov.

♂. More resembles the race *leucias* from Mount Goliath. Upperside with much broader black margin on fore wing and slightly broader margin on hind wing.

Underside of fore wing with orange area only reaching to just beyond the cell, its edge here being straight (not curved as in other forms). Hind wing with the light discal patch a little reduced distally, its edge being farther from the margin than in *leucias* and agreeing with this race in the red submarginal line edged with white.

Habitat.—Rawlinson Mountains, North British New Guinea (Keysser). One ♂ in coll. Rothschild.

8. *Delias dice* **rectifascia** subsp. nov.

Compared with *dice samarai* J. and T.

♂. Fore wing below with the white costal bar rectilinear, being broader and not constricted in cellule 4; costal black bar not filling the whole of the base of cellule 4. Hind wing below with the margin a little narrower.

♀. Hardly distinguishable from *samarai* ♀ (Milne Bay, etc.), fore wing below with white costal bar larger. Hind wing below with reduced yellow markings and the white ground more prominent. A ♀ from Sud Est only differs from *samarai* ♀ in the reduced yellow markings on hind wing below.

Habitat.—Rossell Island (A. S. Meek) three ♂♂, one ♀ (types); Sud Est Island: Mount Riu, 2,000 feet, April (Eichhorn Bros.), one ♀. All in coll. Rothschild.

9. *Delias pheres* **angabungana** subsp. nov.

♂. Hind wing above with the marginal border a little broader than in the allied *hyperapproximata* Roths., especially the two posterior spots. Fore wing below with the submarginal spots a little larger. Hind wing below with submarginal spots in 4 and 5 larger, subbasal spot in 7 larger, base of costa, a spot at base of cell, and basal submedian stripe orange instead of yellow.

Habitat.—Angabunga River, affluent of the St. Joseph River, South-West British New Guinea, 6,000 feet upwards, November, 1904, to February, 1905 (A. S. Meek), one ♂ in coll. Rothschild.

10. *Delias microsticha* **terranea** subsp. nov.

♂. Upperside of hind wing with the narrow black margin (broader though than in typical *microsticha*) extending to vein 3 or 2.

Underside of hind wing and apex of fore wing paler than in the typical form. Hind wing with the submarginal spots in 2 and 3 mostly orange, and in two specimens they are red.

Habitat.—Rawlinson Mountains, North British New Guinea. A series of ten ♂ ♂ in coll. Rothschild.

11. *Delias hypomelas* **rawlinsoni** subsp. nov.

♂ ♀. Upperside with broader black margins to both wings. Fore wing below with the inner white area not extended above the submedian. Submarginal spot in 6 white.

Allied to *conversa* Jord., from Mount Goliath.

Habitat.—Rawlinson Mountains, North British New Guinea. A series of fifteen ♂ ♂, one ♀ coll. Rothschild.

12. *Delias lytaea* **smithi** nom. nov.

This name is given to replace *georgiana* Sm. which was praeoccupied by Felder who in his Reise Novara used this spelling for his species *georgina*.

D. georgiana, Grose-Smith, *Ann. Mag. Nat. Hist.* (6) 15, p. 228 (New Georgia) ♂.

Smith and Kirby, *Rhop. Exot.* ii, *Delias* vi, p. 20, figs. 3, 4 ♂ (1896).

Butler, *Ann. Mag. Nat. Hist.* (6) 20, p. 157 (1897).

13. *Delias aroae* **angiensis** subsp. nov.

♂. Not very different from the typical British New Guinea subspecies, with which it agrees on the upperside.

Underside of fore wing with the submarginal dots below vein 4 less strongly marked. Hind wing with the cell-spot and submarginal spots smaller.

♀ similar to the ♂. Hind wing below with discal band narrower than in *aroae* ♀ and not reaching the inner margin.

Habitat.—Angi Lakes, Arfak Mountains, North East Dutch New Guinea, 6,000 feet, March 1914, A. C. and F. Pratt. A series of males and one female in the Hill Museum.

14. *Delias ligata* **dealbata** subsp. nov.

♂. Upperside and fore wing below as in *ligata* from British New Guinea. Hind wing with the white area not reaching beyond vein 2, rarely slightly extended beyond that vein; reduced posteriorly, not extending into cellule 2 and forming a smaller patch in cellule 3.

♀ above with less sharply defined black border on the hind wing, mostly with only a black dusting. Underside as in the ♂, but fore wing with sometimes some yellow discal suffusion. Hind wing with the red line more narrowly edged with black anteriorly.

Habitat.—Arfak Mountains, North East Dutch New Guinea 6,000 feet, March, 1914, A. C. and F. Pratt. A series of males and 6 ♀ ♀ in the Hill Museum.

NEW SUMATRAN GEOMETRIDAE IN THE JOICEY COLLECTION.

BY LOUIS B. PROUT, F.E.S.

THE extraordinary rich and interesting collection of *Geometridae* made by the brothers Pratt for Mr. Joicey in 1921, in the Korintji district of S.W. Sumatra, contained a high percentage of new species or subspecies, very few of which have hitherto (in the pages of Seitz' "Macrolepidoptera," vol. xii) been made known to science. As it will be a considerable time before that volume is completed, and as, moreover, it is considered desirable that their descriptions should be less scattered and more detailed than is there possible, it is proposed to publish them in the present and succeeding numbers of the BULLETIN OF THE HILL MUSEUM. The *Hemitheinae* have already been described in Seitz', namely: *Archaeobalbis aethalia, Pingasa pauciflavata, Terpna pratti, T. erionoma albicomitata, Agathia tetraplochorda, Tanaorhinus vittata sumatrensis, T. energes, Hipparchus xeromeris, Hemithea prouti* (Roths., *J. Fed. Malay St. Mus.*, viii, p. 138) ♂, *Gelasma korintjiensis* and *Comostola demeritaria vapida*.

Subfamily OENOCHROMINAE.

1. *Ozola* **intransilis** sp. nov.

♂, 37—40 mm.

Close to *falcipennis* Moore. Structure apparently identical, unless the antennal ciliation is very slightly shorter. Head, body and wings coloured as in *falcipennis*.

Fore wing with costal margin heavily strigulated throughout, the strigulations in parts coalescent, their extent gradually increasing basewards, so that at base they are 2 mm., crossing the wing; the broad, curved antemedian band of *falcipennis* reduced to two comparatively small spots, the anterior in cell, confluent with the costal strigulation, the posterior about 5 mm. from base, just behind M; postmedial spot on fold very small; distal dark area forming a complete band proximally (as in rare aberrations of *falcipennis*), containing two, or in the type three, white spots distally, the anterior larger than in *falcipennis*, extending from SC^4 to near R^1, the second smaller than in that species (more as in *atrofasciata* Pagenst.), the third on fold, small, well separated from second. Hind wing with similar markings to those of *falcipennis* but notably smaller, those of the costal area entirely wanting, the subtornal patch narrow and sinuous, the one towards middle of abdominal margin decidedly nearer to tornus than to base (in *falcipennis* vice versa), divided into two well isolated, one at margin the other touching M^2. ♀ similar, with the distal border of fore wing slightly broader.

Habitat.—North Korintji Valley, S.W. Sumatra, 5,000 feet, September-October, 1921, two ♂♂, one ♀.

Bearing in mind the variability of *falcipennis*, it is impossible to state positively that this may not be a race of it, but in any case it needed describing. In some respects it appears transitional towards *pica* Wilem.

2. *Ozola* **apparata** sp. nov.

♂, 43 mm.

Superficially similar to the preceding, or in the larger markings of the fore wing to *falcipennis*. Antennal ciliation fully as long as in the latter. Hind tibia more broadly dilated. Principal abdominal spots paired, subdorsal. Both wings shaped more as in *picaria* Swinh., fore wing not concave behind apex, hind wing with termen gently and evenly rounded.

Fore wing with a small basal patch, not quite solid, in front of cell a little extended; an irregular, somewhat asymmetrical antemedian band, curved much as in the allies, much broader and more conglomerate anteriorly than posteriorly; a black, scarcely interrupted costal border from this band to apex, broadening distally; a very large discal spot, as in the extreme forms of *falcipennis*; postmedial band consisting of two large, elongate spots, one from the costal border to near R^2, the other from the fold behind R^2 to M^2, proximally touching hinder angle of cell; subterminal and terminal bands partly fused, much as in some forms of *falcipennis*, both interrupted at R^3 to M^1 (leaving a patch of the white ground-colour), a spot between them in cellule 6 and a very small one behind M^2 remaining white. Hind wing with the maculation similar to that of *intransilis*, at and near apex more broken into rounded spots, those of abdominal margin consisting of a rather broad, elongate one close to tornus, then a smaller, then a moderate and roundish one (corresponding to the pair in *intransilis*), then proximally some very small ones.

♀, 41 mm.

Similar to the ♂, the maculation still heavier, postmedian of fore wing interruptedly continued to hind margin, costal area of fore wing with some small spots or dots; postmedian spot of hind wing longer (the differences more likely aberrational than sexual).

Habitat.—S.W. Sumatra, North Korintji Valley, 5,000 feet, September-October, 1921, type ♂; Barisan Range, western slopes, 2,500 feet, allotype ♀.

Subfamily STERRHINAE.

3. *Problepsis* **achlyobathra** sp. nov.

♂, 38 mm.

Face dark above, pale but with some dark irroration below. Palpus pale beneath. Vertex black. Antennal shaft dark, the longest pectinations little over 2. Thorax above smoky, abdomen above blackish except at the incisions. Hind tarsus not greatly shorter than tibia.

Fore wing marked nearly as in *transposita* Warr. (*Nov. Zool.*, x, p. 370), but with the ground-colour more tinged with brown, the proximal half heavily suffused with purplish-grey and with indications of a diffuse darker antemedian band much as in *metallopictata* Pagenst. (= *venus* Th.-Mieg.); ocellus rather broad, the two black lines in its hinder part (at base of M^1) longer than in Warren's species, the curved postmedian band broader. Hind wing similar to that of *transposita*, the metallic irroration proximally is slight, a curved dark cell-mark on $DC^{2\cdot 3}$, the thick line immediately beyond rather dark, gently curved, the outer silvery band continued as a grey one to abdominal margin, both parts followed distally by a conspicuous olivaceous band, which tapers almost to a point at tornus.

Underside less smoky, especially proximally; both wings with indications of median and rather prominent, somewhat curved, postmedian band.

Habitat.—Barisan Range, west slopes, October-November, 1921.

Subfamily LARENTIINAE.

4. *Acolutha* **talis** sp. nov.

♀, 23—24 mm.

Head reddish-brown, mixed with white, on the fillet with yellow. Thorax and abdomen above bright yellow, beneath more whitish; patagia (tegulae of Hampson) tinged with brown.

Fore wing brighter yellow than even in *flavipictaria* Prout (*Nov. Zool.*, xxix, p. 249) recalling *Eois dissimilis* Moore; the pale violet-grey, ochreous-sprinkled costal area slightly less strongly developed than in the other species of *Acolutha*; cell-dot strong, black; lines ochraceous, the proximal ones indefinite, chiefly indicated on the grey costal area; one just beyond the cell-dot fairly thick, almost complete, only weakened between the medians, moderately angulated outward at R^1; postmedian double, the interspace pale violet-grey, the angulation outward in front of R^1 acute, an inward bend between the radials, a deeper one behind M^2, just in front of which the lines and shade are slightly interrupted; subterminal not strong, slightly confluent with terminal between the veins; terminal thin and weak. Hind wing bright yellow; cell-dot smaller, but sharp; two fine, fairly direct slightly interrupted ochraceous median lines, the proximal crossing cell-dot, the distal continuing that of fore wing; markings of distal half as on fore wing.

Underside yellower than in the allies; costal area of fore wing rather less deep fuscous, more reddish; hind wing with distinct indications, in yellowish, of broad, diffuse postmedian and subbasal lines.

Habitat. -Slopes of Mount Korintji, 7,500 feet, August-September, 1921, three ♀♀.

5. *Gonanticlea* **albizona** sp. nov.

♂, 33 mm.

Head and body white, very densely (on face much more sparingly) irrorated with drab and deep fuscous. Palpus much as in *occlusata* Feld., but rather more slender and loosely scaled; first joint white beneath.

Fore wing shaped almost as in *occlusata*, the termen very slightly more oblique and less sinuous; general coloration and scheme of markings as in that species except as noted; subbasal band more noticeably incurved before M; median area broader, proximally not deeply inbent behind SC, more strongly convex between this bend and hind margin, distally with a longer and broader projection, straighter between R^1 and M^1; the contained narrow band creamy-*white*, in the type just encroaching into the cell, so that the small black cell-dot stands just within it. Hind wing slightly longer costally; rather lighter orange (almost orange-buff, Ridgway, pl. iii, *d*), the smoky suffusion of base, abdominal margin and termen more restricted.

♀, 38 mm.

Fore wing little different from some aberrations of ♀ *occlusata*; termen slightly less sinuous; subbasal band, as in ♂, more sinuate; distal markings almost obsolete, except costally. Hind wing elongate costally; smoky suffusion of abdominal margin even more restricted than in the ♂.

Habitat.—S.W. Sumatra: slopes of Mount Korintji, 7,300 feet, August-September, 1921.

Except in the very different shape of hind wing, more like *amplior* Th.-Mieg., from Borneo, than like *occlusata*.

6. *Electrophoes fulgidaria* (Leech) **chrysodeta** subsp. nov.

♂, 34 mm.; ♀, 38—39 mm.

Larger than *fulgidaria fulgidaria* Leech, from North India and West China. Fore wing with the antemedian line much less acutely angled on M^1; subterminal shades deeper, tending in places to obliterate the white subterminal marks. Hind wing much more tinged with gold-yellow than in *fulgidaria fulgidaria*. Underside much deeper golden than in that race.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921. Type ♂, allotype and paratype ♀.

7. *Ecliptopera* **thalycra** sp. nov.

♂, 48 mm.

Head and body brown, mixed on thorax above with blackish, elsewhere with ochreous; abdomen with indications of a pale dorsal line and a thick dark lateral one, the ventral surface paler, with indications of three fine, dark lines.

Fore wing elongate, about as in *obscurata* Moore; brown with blackish, pale-edged markings, somewhat as in that species; subbasal pale line straightish; the succeeding line (boundary of proximal area) rather sharply angled in cell-fold; dark patches in succeeding area somewhat as in *delecta* Butl., the central one (which is generally confluent with the anterior) being acutely angled outward in front of fold; median area formed (somewhat as in *relata* Butl.) of a large portion between costal margin and fold and a small one posteriorly, but with a deep distal indentation on M^1; the contained pale markings distinct, variable, inclining to meet on some of the veins and form misshapen rings; dark spots or wedges beyond postmedian stronger than in *obscurata*; subterminal line forming a rather broad curve between apex and cellule three, and again receding well from termen posteriorly, the enclosed dark terminal patches consequently ample, especially the anterior; fringe feebly spotted, with a pale line at base. Hind wing elongate; ochraceous-orange, becoming paler anteriorly and rather broadly clouded with fuscous at base and abdominal margin; fringe mostly infuscated.

Both wings beneath dirty ochreous, more or less suffused and clouded (especially on fore wing) with fuscous; both wings with elongate cell-mark (that of hind wing the blacker) and ill-defined dark lines or bends especially in median area.

♀ similar but a little larger.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂♂ and two ♀♀, type, allotype and paratypes. North Korintji Valley, 5,000 feet. September-October, 1921, one ♀.

8. *Chloroclystis* **palmaria** sp. nov.

♂, 25—29 mm.

Head and body green, the abdomen mixed with orange-buff, at extremity with black. Frontal tuft fairly strong, loose. Palpus 2½; second joint heavily scaled above and beneath, the scales in part long and loosely projecting, terminal joint about one-half second; outer side dark irrorated. Antenna with minute projecting dark tufts at ends of joints. Abdomen long, crests vestigial. Hind tibia with all spurs well developed, though unequal.

Fore wing strongly elongate, costa strongly shouldered at about one-third, termen strongly oblique, almost straight to near M^2, then curved, tornus rounded off; SC^1 anastomosing with C, which thence becomes weak to subobsolete, M^1 arising extremely far from end of cell, nearer to M^2, which is also unusually proximal; mignonette-green to rainette-green with some dark irroration; a large flesh-ochre androconial patch between hindmargin and SC, commencing about 2 mm. from base and almost reaching outer black line, thickly beset in median area with glossy, erect, black androconia; cell-dot black, minute; median area 4 mm. wide at costa, 2 mm. at hindmargin, marked with indistinct lines, and with a black costal mark at the postmedian; antemedian slightly dentate outward at both folds; postmedian irregularly lunulate-dentate and projecting about R^1-R^2; a rather thick black line about parallel with postmedian, bounding the subterminal area proximally; subterminal line faintly pale, with some very indistinct proximal dark shading, at least between the radials; termen with interneural blackish dashes; fringe clouded opposite these. Hind wing very small (about half as long as fore wing), termen not quite regularly rounded, abdominal margin somewhat puckered, no fringe; SC^2 stalked, DC^2 curved, extremely oblique, R^2 central or slightly behind (from angle of DC^2 with DC^3, which is vertical); orange-buff, almost entirely covered with androconial scaling; extreme base white.

Fore wing beneath similar green or slightly paler; the blackish markings (except the androconia) indicated. Hind wing beneath much as above, but with the proximal part slightly more reddish, and sometimes with slight indications of a curved, grey or black line somewhat proximal to middle.

Habitat.—Slopes of Mount Korintji, August-September, 1921, four ♂ ♂ (including the type); North Korintji Valley, September-October, 1921, one ♂.

♀ ♀ taken together with the above (slopes of Mount Korintji, 2; North Korintji Valley, 2) and presumably belonging here, have the palpi 3 and the fore wing more normally shaped, though still rather elongate, the median veins normally placed; coloration and markings similar (except for the androconia) some of the markings generally stronger (e.g., subbasal and succeeding line and proximal shading of subterminal); hind wing of normal proportions, glossy cream-colour (whitish, suffused—especially towards termen—with Naples-yellow or cream-buff), with indications above, as well as beneath, of a grey line proximally to and one distally to the middle and with faint subterminal shade. A ♀-ab. or close ally (slopes, 1) is larger, more variegated more strongly marked, abdominal crests perhaps stronger (whitish) some black markings near base of abdomen, line between subbasal and antemedian angulated outward in cell.

This species belongs in the vicinity of the sections (genera, according to Warren) *Chloroplintha* and *Aëtheolepis*, but is not close to anything previously known. I have, however, a race or very close ally from Mount Gedeh, Java, kindly presented by Dr. E. A. Cockayne.

9. *Chloroclystis* **analyta** sp. nov.

♂, 23 mm.

In most points of structure similar to the preceding, but with the palpus less long (about 2), the medians of the fore wing more normally placed, the androconial patch of this wing wanting. Abdomen greyer, the posterior half darker. Fore wing with costal shoulder less strong, tornus less rounded off; ground-colour similar, the markings brown, mixed with black; a subbasal line; a narrow, interrupted band (double black line with brownish interspace) between this and median band; median band narrower than in *palmaria*, not black-marked on costa, but mixed with brown in cell and behind M^2, in these places marked with black, a black postmedian mark just outside DC conspicuous; shadings of subterminal strong at costa and hindmargin and especially at radials, where it is mostly black. Hind wing not quite so short in proportion as in *palmaria*, not contorted; fringe, however, wanting; rather dark drab, deepening to chaetura-drab at termen.

Underside paler than in *palmaria*, the hind wing more greenish than orange, the scaling less highly specialized; two lines showing on this wing.

Habitat.—Slopes of Mount Korintji, August-September, 1921, type ♂.

A ♀ in poor condition which probably belongs here is paler, with the hind wing ample, almost white; data the same.

Subfamily GEOMETRINAE.

10. *Ourapteryx* **nigrifimbria** sp. nov.

♂, 50—60 mm.

Face light reddish-brown. Palpus slightly paler. Vertex yellowish-white; occiput white. Thorax cream-colour or tinged with whitish-buff. Abdomen white with a broad red-brown dorsal line. Legs spotted with black.

Fore wing creamy-white, the costal margin tinged with yellow, the distal with reddish-buff; a group of long fine black costal strigulae in basal area and more scattered, more variable ones in median area; transverse lines light brown (at costal end mixed with black), broadened into bands (*circ.* 1—1·5 mm.); antemedian straight, from almost one-fourth costa to well beyond middle of hind margin; postmedian from three-fifths costa to hind-margin close to tornus, straight or very faintly subconcave in middle; median generally rather narrower, especially posteriorly, ending just behind base of M^1; black-brown strigulae of distal area generally strong, the first few generally continuous across the wing, the middle ones about half-length, the subapical short; terminal line black; fringe proximally black or black-brown, distally grey or grey-white.

Hind wing with the tail rather long (shaped about as in *clara* Butl., "Ill. Het.", vi, t. 113, f. 6); white, in distal area tinged with yellow; the three brown lines or shades placed as in *clara*, but stronger and broader; a broad red terminal line from apex to tail, finely edged proximally with black-grey; a grey shade continuing this line to R^3, enclosing a red spot; a large black spot in cellule 3 near the tail and a small one in cellule 2, both placed at the distal end of an extended orange suffusion; fringe blackish, traversed by a fine central whitish line.

Underside with the principal markings faintly reproduced.

♀, 66—72 mm.

Larger and whiter than the ♂, otherwise similar.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, thirty-eight ♂♂, thirteen ♀♀ (including holotype ♂ and allotype ♀); slopes of Mount Korintji, 7,300 feet, August-September, 1921, forty-five ♂♂, five ♀♀.

11. *Thinopteryx* **stenoleuca** sp. nov.

♂, 95 mm.

Near *crocoptera assamensis* Swinh. Antennal ciliation apparently somewhat longer.

Fore wing with termen slightly more bowed before middle; white costal border much narrower (bounded proximally by C, then by SC and SC^4), more heavily black-spotted; strigulation rather deeper orange, coarser but less regularly distributed, leaving a larger number of patches of the pale yellow ground-colour; cell-mark weaker; antemedian line obsolete; postmedian feeble, orange without the grey admixture, more proximal than in *crocoptera* and forming a very gentle inward curve; subterminal dots obsolete. Hind wing differing little from that of some *crocoptera assamensis*, the central cluster of dark spots not very sharply defined; a rather ample patch of the clear yellow ground proximally to this cluster.

Habitat.—S. W. Sumatra. Slopes of Mount Korintji, 7,300 feet, August-September, 1921, only the type taken.

12. *Phrudura* **leucadelpha** sp. nov.

♂, 40—44 mm.; ♀, 46 mm.

Near *pura* Swinh., agreeing in structure except that the ♂ antennal pectinations are rather shorter (scarcely over 2, in *pura* about 3). Face white or whitish-buff, edged above with reddish. Vertex white, tinged with reddish-buff in front. Antennal shaft more uniformly reddish-brown. Body and legs white, fore leg mainly reddish on the outer side; hind tibia pencil grey.

Fore wing with apex slightly more acute than in *pura*, termen still straighter; satiny-white, with extremely faint grey irroration; costal edge yellow; fringe orange, tornally white, tips pale. Hind wing with termen still straighter than in *pura*, with no bend at R^3; white; fringe as on fore wing but white apically as well as tornally.

Underside the same.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, seventeen ♂♂, two ♀♀.

13. *Tasta* **apluta** sp. nov.

♀, 35 mm.

Face and palpus brown, slightly dark-mixed. Thorax and abdomen concolorous with wings. Fore coxa and femur partly pale brown.

Fore wing plumbeous, more uniform than in *micaceata* Walk., the metallic irroration somewhat less copious; the dark band-like shades broad, rather less indistinct than in the allies; antemedian slightly oblique outward; postmedian rather less oblique than termen, only weakly curved anteriorly; subterminal fairly well expressed throughout, the characteristic row of metallic spots beyond it obsolescent, only the anterior two at all definitely expressed. Hind wing with the feeble postmedian line rather distally placed; subterminal ocellus rather small, placed transversely to R^3, only very slightly oblique, i.e., similar to that of *reflexa* Swinh.

Underside with the postmedian band slightly more distal than in *chalybeata*; terminal band not so broad, rather weaker than in the allies.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921.

14. *Plutodes* joiceyi sp. nov.

♂, 35 mm.; ♀, 37—42 mm.

Face and palpus yellow, mixed with rufous; base of palpus paler. Vertex yellow. Thorax and abdomen rufous above, whitish beneath; patagia and base of tegulae yellow.

Fore wing with SC^1 shortly stalked, about as in *exquisita* Butl.; citron-yellow; markings vinaceous-brown, mixed with rufous; basal patch 4—5 mm. long on hind margin, bounded by a semicircular leaden-blackish line which reaches the cell-fold; distal patch very large and broad, not quite reaching costal margin, proximally bounded from R^1 to fold by a double, convex, leaden-blackish line, distally by a single similar, but less convex, line close to termen, receding a little toward tornus, anteriorly bent at SC^5 and continuing in a more proximal direction as far as SC^4; a deeply, rather irregularly dentate black-red line across this patch proximal to its middle, shaded with orange or ochreous distally; a brick-red line just within, and parallel to, the distal line; a narrow orange-mixed patch connecting the large patch with hindmargin; fringe yellow. Hind wing gibbous about R^3, but nowhere angled; an abdominal marginal patch joining the terminal, much as in *exquisita,* but broadening a little more basally; distal patch nearly as on fore wing, though not quite as large, the posterior patch connected with it brighter salmon-orange, broadening so as to reach tornus and abdominal border; a black terminal spot at end of fold, larger than that of *exquisita.*

Underside with the basal and abdominal markings almost obsolete, the distal patches blurred, broadly shaded all round with black-grey.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921. Type ♂ and three ♀ ♀.

15. *Synegia* medioxima sp. nov.

♂, 34 mm.

Head bright orange-rufous, slightly mixed with yellow. Palpus similarly coloured, just over 1½, third joint moderately elongate. Antenna slender, proximally almost simple, then developing respectively teeth and very short and slender pectinations, distal part (perhaps one-fourth, but extreme tip lost), again narrowly simple. Thorax and abdomen above orange-rufous, but heavily suffused with deep purplish-grey; beneath buff, the hair in front of pectus more ochraceous; anal extremity whitish. Foreleg blackened on upperside; other legs slightly darkened in places.

Fore wing with $SC^{1,2}$ long-stalked, their stalk anastomosing shortly with C, SC^2, closely approaching $SC^{3,4}$, but not connected; yellow, almost throughout, closely irrorated with orange-rufous, leaving a clearer line on either side of median area; some strigulation and suffusion of dark purplish-grey, heavy and nearly black on either side of subterminal line; costal area dotted or spotted with blackish; cell-dot black, very slightly elongate; antemedian line at about 5 mm., from SC to hindmargin, blackest in cell; postmedian from C at 11 mm. to hindmargin at 8 mm., appearing rather slightly outbent at R^3 on account of a slight inward curve in posterior half and a still slighter in front; subterminal about 2 mm. from termen, slightly inbent in cellule 4 and incurved from behind M^2 to termen; terminal line black; fringe irrorated with blackish, weakly spotted opposite the veins. Hind wing with termen in middle strongly crenulate; more heavily clouded with deep purplish-grey; cell-spot at least as elongate but rather less intense; postmedian and subterminal sharply angled at R^3, thence dentate and parallel with termen; terminal line and fringe as on fore wing.

Underside less bright but with the same markings; only the hindmarginal part of fore wing whitish and unmarked.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921.

The antennal structure is transitional from *Synegia* proper towards Warren's probably untenable genus *Eugnesia*.

16. *Synegia* **orsinephes** sp. nov.

♂, 34 mm.

Face pale yellow, the upper half strongly clouded with red. Palpus rather over 1½; whitish-buff beneath, marked with red above. Vertex honey-yellow, between the antennae narrowly straw-yellow. Antennal shaft white; pectinations moderately long. Body above pale straw-yellow, varied with honey-yellow, beneath whitish. Legs predominantly whitish.

Fore wing shaped nearly as in the *erythra* group, the bend at mid-termen and the undulations behind slightly more pronounced; retinaculum enlarged, as in that group; $SC^{1,2}$ coincident, anastomosing very strongly with C (or presumably the original end of C obsolete, its apparent end being the true SC^1); pale straw-yellow, with honey-yellow strigulation or reticulation; cell-mark black, elongate, passing R^3, but not reaching hind angle of cell; lines sufficiently mixed with grey to render them darker than the irroration; antemedian strongly oblique outward into cell, here sharply recurved, interrupted between M and M^2, reappearing as a spot on the fold and a smaller and more proximal one at hind margin; median apparently double, the proximal straight, from costa to fold, touching hinder end of cell-mark, the distal gently excurved, meeting the proximal at each end; postmedian consisting of a sinuate (S-shaped) series of interneural dots, double in the anterior half, the distal element about 3 mm. from termen and accompanied distally by pale dots; a vinaceous-slate cloud between these pale dots and the cell-spot and from costa to M^1, sending out a weak projection to mid-termen and a stronger oblique dash to apex. Hind wing with apex a little more truncate and termen a little more crenate than in the *erythra* group; concolorous with fore wing; cell-mark elongate, but shorter than on fore wing; a vinaceous-slate subbasal band as in the allies; the wavy lines arranged much as in *erythra*, etc.; a conspicuous straight line from termen at SC^2 to abdominal margin close to tornus, as in that species.

Underside whitish, with the principal markings (cell-marks, interrupted lines and large outer blotch of fore-wing) reproduced in fuscous.

Habitat.—Barisan Range: western slopes, 2,500 feet, October-November, 1921.

Larger and yellower than *medionubis* Prout (*Nov. Zool.*, xxxii, p. 68) with still larger retinaculum, more elongate cell-marks, etc. A ♀ rather larger but precisely similar, was received by Mr. Joicey a year or two earlier from Lebong Tandai, Benkoelen, S.W. Sumatra. The antenna is bipectinate, the branches—especially of the longer (outer) series—only a little less long than in the ♂. A second ♀, also from Lebong Tandai, August, 1921, (C. J. Brooks) has been added since this description was prepared.

17. *Sabaria incitata* (Walk.) **excitata** subsp. nov.

♂, ♀, 36—41 mm.

Fore wing above with the olivaceous bands generally darker, browner, the dark markings beyond the postmedian strongly developed.

Underside rather deeply coloured, the rufous marginal shade broader, on the fore wing extending almost to the postmedian line (which is often indicated in grey), reaching tornus, on the hind wing developed, though narrower than on fore wing.

Habitat.—North Korintji Valley, 5,000 feet, September-October, three ♂ ♂; slopes of Mount Korintji, 7,300 feet, August-September, two ♀ ♀.

18. *Hypochrosis* **praeaurata** sp. nov.

♂, ♀, 51—56 mm.

Closely similar to *binexata* Walk. (= *glaucaria* Snell.).

Fore wing slightly variable in tone (brighter or darker), the markings variable in strength, formed quite as in *glaucaria*, the lines commonly (but not invariably) thickened or accompanied by velvety-black shading. Hind wing with costal region (to cell-fold and radial fold, or almost to M) bright yellow-ochre, shading to ochreous-orange posteriorly.

Underside rather deeply coloured. Fore wing with the apical and terminal regions, hind wing with the terminal, deeper and more extendedly brick-red than in *binexata*, partly clouded with blackish; postmedian line also often indicated on both wings, on the fore wing not reaching hindmargin.

Habitat.—Slopes on Korintji, sixteen ♂ ♂, two ♀ ♀, including type and paratype; North Korintji Valley, a long series. A lighter (but unfortunately slightly worn) ♂ from Barisan Range, taken with eight dark ♀ ♀ of *binexata* lends some countenance to the idea that this may possibly be a remakable colour-form of that species.

19. *Heterolocha* **declinata** sp. nov.

♂, 33 mm.

Face with small tuft below; dark reddish. Palpus 1¾; dark reddish, at base more ferruginous. Thorax and abdomen concolorous with wings.

Fore wing with termen almost straight, rather strongly oblique; cell over one-half; $SC^{1,2}$ coincident, escaping the usual anastomosis with C; cinnamon, costally more mixed with ochreous, the extreme costal edge dark, with irregular pale dots; cell-mark long, broad, whitish with dark-grey circumscription; lines hazel; antemedian at 4 mm.; postmedian from hindmargin at about two-thirds the costa close to apex, forming throughout almost its entire course a very slight inward curve; vague indications of a dark apical mark. Hind wing elongate costally; much paler, more stramineous, faintly irrorated with vinaceous, only along abdominal margin (more broadly tornally) more strongly vinaceous-mixed; postmedian strong from hindmargin into cellule 2, then obsolete; cell-mark faintly showing through from beneath.

Underside more grey, the fore wing costally and broadly in apical area mixed with bright yellow, the tornal area and the hind wing with paler yellow, cell of fore wing and behind (about to fold) purplish, hindmargin of fore wing pale; lines and ocelli indicated in purplish, but not very strong; the line of hind wing complete, but anteriorly very weak.

An aberration is rather smaller, the lines finer and weaker, that of the hind wing, however, traceable to near costa, the underside rather more deeply coloured, the red-purple suffusions and irrorations being stronger. Another is also rather small, but presents a totally different appearance, the fore wing has the central area above and the costal region beneath clear yellow, the hind wing (especially above) yellow as far as postmedian line.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921 (type); North Korintji Valley, 5,000 feet, September-October, 1921 (abs.).

20. *Corymica specularia* Moore, prattorum subsp. nov.

♂, 38 mm.

Distinguished from the other races by its large size, rather less narrowed wings, bright colour (almost lemon-chrome) and strong expression of all the markings. Fore wing with basal costal patch rather ample, containing much of the pallid purplish-grey scaling; the pinkish-cinnamon antemedian and median lines strongly black-mixed at costa, the former well developed to behind fold (with sharp outward angle at cell-fold) the latter to the cell-spot; spot at middle of hindmargin posteriorly broad. with copious pallid purplish-grey shading. Hind wing with the postmedian spots very conspicuous. Abdomen dorsally marked with cinnamon on first segments.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂.

Perhaps nearest some forms of *specularia pryeri* Butl., from Japan, but more deeply coloured, etc.

21. *Luxiaria* **lioptera** sp. nov.

♂, 43 mm.

Face and palpus brown, the former more reddish, both somewhat mixed with dark fuscous; palpus 1¼. Antennal ciliation minute. Head and body concolorous with wings. Legs partly infuscated, especially the upper and inner sides of fore leg. Hind tibia dilated, with grove containing hair-pencil.

Fore wing little broader than in *subrasata*, costa little arched distally, apex very minutely produced, termen almost smooth, less oblique than in *subrasata*, tornus intermediate between those of *subrasata* and of *alfenusaria* Walk., violet-grey, in places with a fleshy-brown tinge; a large, but not sharply-defined, dusky discal lunule; lines brown; antemedian at one-fourth, slightly bent near costa, then almost straight; median from midcosta to before middle of hindmargin very slightly excurved anteriorly, minutely inbent at fold and outbent at SM^2, a little diffused distally; postmedian from nearly three-quarters costa to about two-thirds hindmargin, scarcely curved, fine, slightly punctuated on the veins and with black spots on R^1, from R^3 to M^1 and from fold to hindmargin; pale subterminal lunulate, indistinct; termen with small but sharp interneural black dots; fringe paler. Hind wing with cell one-third, SC not much curved; costal margin longer than in the allies, termen much smoother than in the *subrasata* group, not bent at R^1 or R^3; concolorous with fore wing, anteriorly and basally paler; a blackish cell-dot; median line just beyond, straightish; postmedian straightish, evenly punctuated on the veins, recalling that of *obliquata* Moore; outer area much as on fore wing.

Underside whitish shaded with cream-buff and with minute dark strigulae. Fore wing in and before cell deep purplish-grey, behind whitish; costal area, median and postmedian lines also darkened; terminal area bright tawny, inclining to Sanford's brown (Ridgway, pl. ii), with irregular paler subterminal spots. Hind wing with the postmedian punctiform a tawny line outside it, the distal area less strongly clouded than that of fore wing. In the paratype the shadings of underside are brighter, more orange-rufous.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂♂. A ♀ from Mount Tahan, Malay Peninsula (J. Waterstradt), in coll. Tring Mus., agrees pretty closely in shape and markings, but has the underside paler, the markings deep brownish drab to dusky drab, the borders broad and heavy.

22. *Luxiaria* **hyalodela** sp. nov.

♂, 38—46 mm.

Face and palpus brown, mixed with black. Antennal ciliation vestigial. Head and body concolorous with wings. Abdomen with (generally conspicuous) dark dorsal spots; its scaling beneath rather long and hair like. Hind tibia with the hair-pencil heavy, blackish; tarsus 3 mm. long or slightly over.

Fore wing not very narrow, apex not produced, termen not extremely oblique, distinctly waved and with the very faintest suggestion of the concavity behind R^1 which becomes pronounced in *submonstrata* Walk. (List Lep. Ins., xxiii, p. 772); avellaneous to light cinnamon-drab, with rather strong grey irroration and suffusion (much as in the least extremely grey forms of *submonstrata*); markings normal for the group, not very strong excepting the dots of the postmedian and the antemedian dot on M; median shade well beyond cell-mark; postmedian about 5 mm. from termen, its curves slight, its dot on R^1 scarcely stronger than the rest.

Hind wing with termen rather strongly dentate, but with no sign of a tooth at C, that at SC^2 blunt; the sexual fold behind C almost parallel to it (i.e., less curved than in *subrasata* and *submonstrata*), the hyaline patch in cell strongly developed, very conspicuous against the dusky ground-colour; markings normal; abdominal fringe mixed with buff.

Underside much as in dull *subrasata* Walk. (List Lep. Ins., xxiii, p. 773) but without the whitened apex.

♀, 41 mm. Similarly coloured and marked to the ♂, with the normal shape differentiation of the group. Very like an overgrown *snbmonstrata* ♀, with less solid dark border beneath.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, ♂, allotype ♀ and paratype ♂. North Korintji Valley, 5,000 feet, September-October, 1921, four ♂ ♂. Also from Gunong Ijau, Malay Peninsula, a more ochreous ♂ in coll. Tring Mus., "Java," a typical ♂ in the same coll., "Sumatra," one ♂ in coll. British Mus.

23. *Luxiaria* **postlunata** sp. nov.

♂, 38 mm.

Intermediate between *postvittata* Walk. (List Lep. Ins. xxiii, p. 759) and *iotaria* Feld. ("Reise Novara, Lep. Het.," t. cxxix, f. 26). (Head lost.) Hindtibia with the hair-pencil rather strong.

Fore wing slightly less broad that in *postvittata*, costa well arched (about as in *iotaria*) ; SC^1 obsolete, represented by a mere point or minute bar between C and SC^2 (as in some *postvittata* ; in *iotaria* SC^1 arises from C and is usually free, or at most anastomoses at a point with SC^2; coloration as in not very gay *iotaria* ; dark costal spots rather strong, though the median is not elongate ; cell-mark rather sharper than in *postvittata*, but not enlarged ; postmedian dots about as in *postvittata*, only slightly less oblique, accompanied by a fine ochreous line ; subterminal more deeply dentate than even in *iotaria* ; terminal dots well developed. Hind wing scarcely so quadrate as in the allies ; cell-spot enlarged lunulate ; antemedian line apparently as in *iotaria*, but ill-defined, partly lost in a band-like shade of blackish irroration ; postmedian as straight as in *postvittata*, but more punctiform ; subterminal and terminal as on fore wing.

Underside much as in heavily marked *postvittata* with larger cell-spots and rather less oblique, slightly more crenulate postmedian of fore wing.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921.

It is unfortunate that the type is broken, but as its affinities and its distinctness are so obvious it seems quite safe to make it known.

24. *Semiothisa albimedia* Warr. **ectoleuca** subsp. nov.

♂, 47 mm.

Both wings with basal area rather ampler than in *albimedia albimedia*. Fore wing with a white subapical spot in cellule 6. Hind wing with the postmedian line slightly more excurved.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, type. North Korintji Valley, 5,000 feet, September-October, 1921, paratype.

DESCRIPTIONS OF SOME INDO-AUSTRALIAN NOCTUIDAE.

By Miss A. E. PROUT.

Collected for Mr. J. J. Joicey, by Messrs. C., F., and J. Pratt, in the Mountains of Sumatra.

All Types are in the Joicey Collection.

AGROTINAE.

1. *Agrotis* **latinigra** sp. nov.

♂, ♀, 38—41 mm.

Strongly resembles *A. c-nigrum* Linn., from which it differs in the following particulars. Scaling on segment 2 of palpus only slightly lengthened at the distal end (not strongly triangular, as in *c-nigrum*); the yellow anal tuft of ♂ apparently rather broader—more conspicuous. Fore wing slightly broader in *latinigra*, with the ground colour in ♂ pale grey with pinkish reflections (near pallid quaker-drab, Ridgway, pl. xli), darker, suffused with quaker-drab (l.c.) to postmedial line in the ♀; the ♂ fore wing with rather more dark suffusion near base than in *c-nigrum*, but with the termen hardly dark-shaded; antemedial line rather more waved and more strongly angled outward before hindmargin in *latinigra*, the reniform rather more clouded and slightly more erect. Hind wing in ♂ pure shining white, practically without dark suffusion, but with fringe of yellowish hair at hindmargin above (as in *c-nigrum*); in the ♀ the hind wing is strongly clouded with pale fuscous-brown, leaving only a small portion of the cell pure white. Underside very nearly as in *c-nigrum*.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, six ♂♂, one ♀.

Until a better revision of this subfamily is undertaken, I employ the nomenclature of Cat. Lep. Phal., iv, though it is probable that this species would be more correctly named *Noctua latinigra*.

2. *Agrotis nigrosigna* Moore **postpallida** subsp. nov.

♂, 43 mm.

Very close to typical *nigrosigna*, *Graphiphora nigrosigna* Moore, *Proc. Zool. Soc.*, 1881, p. 352, pl. xxxviii, fig. 4 (Sikkim), but the patagia and fore wing to postmedial line (except behind SM^2) paler and brighter buff, more ochraceous, than in any Indian specimen in the Joicey Collection—much brighter than the majority—the hind wing paler above and beneath, only very weakly flushed with pink before SC on underside and with very fine, slight fuscous irroration; fore wing beneath similarly paler, though with the difference less marked. Fore wing above has the orbicular and reniform almost concolorous with the wing, with weak dark definition; orbicular larger and rather more quadrate than in typical *nigrosigna*; postmedial black points present only in proximal side of the slight pale spots, thus appearing much farther removed from the subterminal line than in Indian specimens, subterminal line scarcely crenulate.

North Korintji Valley, 5,000 feet, September-October, 1921, one ♀.

Although it is a little unsafe to describe a new subspecies from a single specimen, the fact that hardly any of these insects from the mountains of Sumatra really agree exactly with Indian insects has made it seem almost certain that the racial differences will be found constant when more material is known from Sumatra. Subspecies *postpallida* is distinctly larger than any Indian specimen in our collection and the fore wing appears slightly more elongate.

In Cat. Lep. Phal., iv, p. 426, Hampson sinks *nigrosigna* to *rubicilia* Moore, but this appears to me certainly an error; *rubicilia* not only lacks the black claviform spot which seems very constant in *nigrosigna*, but it is a smaller insect, with shorter, paler and more ochreous fore wing and almost white hind wing.

ACRONYCTINAE.

3. *Magusa* **oenops** sp. nov.

♂, ♀, 42 mm.

Head, thorax and fore wing light russet vinaceous (Ridgway, pl. xxxix), irrorated with brownish-black and with a few white scales. Fore wing with the markings very indistinct, the lines somewhat as in *M. tenebrosa* Moore, *Proc. Zool. Soc.*, 1867, p. 59 (Bengal), and *Sasunaga interrupta* Warr., Seitz' "Macrolepid.," xi, p. 121 (1913) (New Guinea), from both of which species it differs in the more vinaceous tone of colour and the smaller orbicular dot; the dark patch behind middle of costa is somewhat as in *interrupta*, and the broad black streak behind proximal third of fold is also conspicuous (as in *interrupta*), but the pale streak to termen is almost entirely wanting, the subterminal and terminal dark shading being scarcely interrupted except by a slight dark bar behind R^2; a row of distinct black streaks between the veins, from subterminal line to termen. ♀ with a conspicuous broad pale streak from base, as in *interrupta*, but hardly reaching to middle of wing. Hind wing in both sexes with a rather large discal spot surrounded by a diffused pale patch, the rest of the wing pale brownish-fuscous. Underside a good deal as in *tenebrosa*, but hind wing white to the postmedial line, except at costa, with broader discal spot; the costa strongly irrorated with vinaceous.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂, one ♀.

This seems quite a distinct species; the shape is nearer to *interrupta* than to *tenebrosa*. Nearest in colour to *oenistis* Hmpsn., Cat. Lep. Phal. vii, p. 56, but paler and much less sharply-marked.

4. *Trachea literata* Moore **benescripta** subsp. nov.

♂, 30—33 mm.

Averages a little smaller than typical *literata*, " Lep. Atk.," p. 124 (1882) (Sikkim), with the dark shading on fore wing stronger, rather less interrupted; the proximal third of fore wing more darkened (though interrupted by subbasal line); the claviform almost solidly blackish, the tail of the letter-mark usually narrower and rather more curved than in typical *literata*; the postmedial line rather more oblique and more definite from behind costa to R^2; the pinkish subterminal shade rather narrower and weaker; dark terminal shading opposite the fold almost wanting, the dark shade opposite the cell on the other hand blacker and more solid than in typical *literata*. Hind wing and underside differing little from the type-form, but the fore wing beneath apparently a little more darkened in subspecies *benescripta*.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, ten ♂ ♂.

5. *Euplexia* **leucomelas** sp. nov.

♂, 30 mm.

Differs from *rostrifera* Warr., *Nov. Zool.*, xix, p. 16 (1912) (Celebes), of which this may possibly be a local race, in having the proximal and abdominal half of hind wing above white, only interrupted by dark veins, a slight dark line on abdominal margin, some narrow subterminal shading (extending almost to anal angle), and a dark terminal line (lost at angle); hind wing beneath with the dark shading also reduced. Differs on fore wing above in having the dark shading more continuous, not interrupted at costa by white subbasal and antemedial streaks (as in *rostrifera*), distal third of costa without the strongly-marked black and white spots of *rostrifera*; distal edge of medial dark band slightly angled at M^2 (without angle in *rostrifera*) and angled outward to hind-margin, terminal shading posteriorly more diffused than in *rostrifera* and without the distinct angle at M^1, the white marginal spots reduced in size. Hair on palpus whitish at tip and beneath; metathoracic crest pure white.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂ ♂.

This is just possibly merely an aberration of the following species, but it presents quite a different appearance and seems to be distinct.

6. *Euplexia albovittata* Moore **albifrons** subsp. nov.

♂, 33—36 mm.

Somewhat intermediate between typical *albovittata*, *Proc. Zool. Soc.*, 1867, p. 57, pl. vi, fig. 16 (Sikkim) and subspecies *latifascia*, BULL HILL MUS., i, p. 203 (1922) (Cent. Ceram) (published as species), from both of which it differs in having the face pure white; medial band much as in the typical race, or even narrower, but the buff shading towards termen more as in subspecies *latifascia*; the bar from costa beyond reniform is darkened as in the Ceram form but narrow as in Indian specimens. Hind wing above and both wings beneath nearly as in the typical form, but the hind wing beneath lacks the dark discal spot and the fore wing usually shows a slight pale spot near termen at about SC^5. In one aberration the terminal area has less buff shading but has some dark irroration in its stead. Hair on palpus and metathoracic crest as in *leucomelas*.

S.W. Sumatra; North Korintji Valley, 5,000 feet, September-October, 1921, five ♂ ♂; Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂ ♂.

7. *Euplexia* **latilinea** sp. nov.

♂, 32 mm.

Differs from *albovittata albifrons* in the dark shading on the face, the less intensely black hair on abdomen beneath, and especially in the markings of fore wing, where the central black band is greatly broadened, its distal edge reaching, behind reniform, to about three-quarters length of wing, very narrowly joined to the dark bar from costa beyond reniform, behind reniform following the curve of termen to SM^2, the band very narrow and pale behind SM^2; basal dark shade and proximal tooth of the medial band both somewhat enlarged, reducing the antemedial white band to a very broad white line from SC to hindmargin; reniform nearly as in *albovittata*, but better defined by its more continuous dark outline; postmedial line white, broad, distally defined by pale greyish-buff from costa to R^3 and by a blackish shade from R^3 to hindmargin, the latter only separated from the terminal shade by a very fine pale subterminal line. Hind wing and underside somewhat as in *albovittata albifrons*; the fuscous tones apparently rather paler, but this may be due to the less perfect condition. Palpus and metathorax about as in preceding species.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂.

Probably nearest to the *albovittata* collective species; just possibly an extreme aberration of *albovittata albifrons*, from which, however, it appears to be quite distinct.

8. *Euplexia* **tricolor** sp. nov.

♂, 33 mm.

Somewhat similar to *albovittata*, but the proximal third of wing suffused with vinaceous-tawny (Ridgway, pl. xxviii), largely overlaid with fuscous except near the antemedial white line, which is narrower than in *latilinea*; reniform and postmedial line somewhat as in *latilinea*, but the latter very fine; distal third of wing suffused with pinkish-buff (pl. xxix), the wing being thus divided into three differently-coloured areas, with the two more vinaceous shades separated by the dark median band; terminal shade about as in *albovittata*. Hind wing nearly as in the two previous species but the fuscous shading appears a little narrower. Underside somewhat as in *albovittata albifrons*, but the dark shades apparently browner, less intense. Hair on palpus and metathoracic crest tawny.

North Korintji Valley, 5,000 feet, September-October, 1921, one ♂.

9. *Euplexia* **ischnogramma** sp. nov.

♂, 33 mm.

Fore wing raw umber to the antemedial line, which is indistinct, only a little paler than the base of wing, more broadly and less strongly dentate in fold than in either of the foregoing species; reniform, postmedial line and area beyond postmedial nearly as in *tricolor*, but all a little less strongly marked. Hind wing and underside nearly as in *tricolor*, but the dark shades apparently a little paler still and slightly more reduced. Palpus and metathorax coloured nearly as in *tricolor*.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂.

A weakly-marked insect, possibly a unicolorous aberration of *tricolor*, but as the two specimens were not taken together and the antemedial line appears different, there has not seemed sufficient ground for regarding them as one species. In *ischnogramma* the patagia is not variegated with whitish, as it is in *tricolor*.

10. *Euplexia* **chlorophragma** sp. nov.

♂, 34 mm.

Patagia deep cinnamon; the crests tipped with cinnamon. Fore wing with the proximal and distal thirds ivory-yellow (Ridgway, pl. xxx), with the lines broadly edged with honey-yellow (l.c.), or (in parts) with deep bistre; a band of pallid-purple drab (l.c. pl. xlv) between subbasal and antemedial lines; a similar band between postmedial and subterminal lines; medial area predominantly deep bistre, but more variegated than in either of the foregoing species, with a pallid purple-drab orbicular, outlined with honey-yellow, and with a large spot of the same colour behind it; the drab shade is also present at and behind costa and in the (usual) two dark dots on the pale reniform; hindmargin narrowly honey-yellow; antemedial line much more shortly and broadly dentate at fold than in *albovittata*; postmedial minutely dentate, interrupted at the posterior end of reniform, but much more nearly continuous than in *albovittata*; a fine, whitish, crenulate subterminal line, almost lost at costa and hindmargin, with proximal dark shade and slight dark distal outline; the termen honey-yellow not suffused with fuscous. Hind wing and underside nearly as in *tricolor*, but hind wing beneath with traces of a postmedial line.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂.

This seems to me unquestionably a distinct species.

11. *Perigeodes poliomera* Hmpsn. **albinotata** subsp. nov.

♂, 35—40 mm.

Antenna slightly serrate, with fasciculate bunches of cilia about as long as diameter of shaft.

Differs from typical *poliomera*, Cat. Lep. Phal., vii, p. 287, pl. cxv, f. ii (1908) (Khasias), in the slightly larger size and the rather more contrasted appearance of fore wing, where the dark markings are rather stronger; a broad streak behind costa, from apex to middle of wing, and the large patch before hindmargin almost pure white and rather more sharply defined than in the Indian form, the latter being *twice* indented on its anterior edge; a rounded patch of pale ochraceous-buff between the subterminal line and termen, from about R^1 to M^2, is much more clearly defined than in the Indian forms. Hind wing paler at the base in subspecies *albinotata*, but this may well be sexual. Underside rather more contrasted than in typical *poliomera*, with the termen of fore wing and base of hind wing distinctly paler; the terminal band of hind wing narrower and not reaching behind fold.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, four ♂♂; North Korintji Valley, 5,000 feet, September-October, 1921, two ♂♂.

12. *Perigea stellata* Moore **emphatica** subsp. nov.

♂, 37—42 mm.

Head and patagia rich ochraceous-buff, irrorated and banded with russet (Ridgway, pl. xv).

Ground-colour of fore wing a trifle warmer in tone than in *stellata stellata*, *Prospalta stellata* Moore, Lep. Atk., p. 111 (1882) (Sikkim), with the white spots slightly larger and more outstanding, but in the cluster representing the reniform the proximal pair of central spots are usually wanting. Hind wing distinctly paler than in the Sikkim form, especially on proximal half, and with a fairly well-defined pale postmedial line and dark distal streak. Underside of hind wing with postmedial line more strongly bent inwards in fold than in *stellata stellata*.

♀, 42—43 mm.

Hind wing slightly darker than in the ♂, but showing much the same relative differences.

Both in the typical form and in subspecies *emphatica* the ♀ has the underside more suffused with rufous than in the ♂, especially on the fore wing.

Slopes of Mount Korintji 7,300 feet, August-September, 1921, nine ♂ ♂, one ♀; North Korintji Valley, 5,000 feet, September-October, 1921, nine ♂ ♂, one ♀.

13. *Perigea* **gilvithorax** sp. nov.

♂, 28 mm.

Antenna with short ciliation; apparently without secondary sexual characters; cell of hind wing a trifle long for a *Perigea*. Head and thorax pale buff—a very noticeable feature in this insect. Fore wing coloured nearly as in the preceding species, the brown perhaps slightly more tawny, the pale spots creamy-white; a broad, pale subbasal band at about 1½ mm. from base, from costa to fold, minutely dentate proximad on M and distad in cell and fold; a very large, round orbicular at about 4—5 mm. from base, reaching SC and M, with a large pale spot before it at costa; a rather smaller pale spot at costa at about 7 mm. from base, behind which the semiquadrate reniform is very indistinctly indicated by four or five paler dots; postmedial line composed of a row of pale spots between the veins with minute white dots *on* the veins beyond them, sharply bent outward from the pale costal spot, nearly straight (outwardly oblique ?) from SC to R^2, *strongly* incurved in fold, bent outward on SM^2 and ending in a slightly oblique, broad, pale bar to hindmargin at about 7½ mm.; a broad oblique pale mark at apex followed by a row of subterminal pale spots on the veins, which are strongly bent inward at fold; a row of large pale terminal spots between the veins, the largest being between R^3 and M^1; fringe chequered-brown and creamy-white.

Hind wing somewhat as in *stellata emphatica*, the postmedial line apparently less well defined (but this insect is not in quite fresh condition), termen without dark and pale lunules. *Wings beneath* whitish, irrorated with brown (hind wing on anterior fourth, fore wing more or less throughout), both wings apically shaded with tawny; fore wing with a conspicuous white spot at origin of postmedial line with two minute white dots at costa beyond it and slight oblique pale dash at apex, a slight pale (tawny) shade from costa at about 4 mm.; postmedial line weak, minutely crenulate, distally oblique to R^2, thence proximally oblique, proximally angled just behind M^2; the line is continued (more strongly) across hind wing, somewhat as on fore wing, but more distinctly angled distad just *behind* R^3; hind wing with broad discal lunule with rather large spot in cell before it and a second, much finer and weaker lunule beyond it.

Barisan Range, Western Slopes, 2,500 feet, October-November, 1921, one ♂.

14. *Data* eriopoides sp. nov.

♂, 32 mm.

Vertex of head whitish; wing tegulae with a conspicuous whitish streak at middle; coloration of head and thorax otherwise nearly as in *D. thalpophiloides* Walkr., *Journ. Linn. Soc. Zool.* vi, p. 192 (1862) (Sarawak), but the patagia a little more chestnut; abdomen with the yellow apparently confined to a narrow area at proximal end (but may be discoloured by grease). Fore wing somewhat as in *thalpophiloides*, from which, however, and from all previously described *Data* species it is at once distinguishable by a broad, horizontally dart-shaped whitish mark on terminal area, between R^2 and R^3, somewhat recalling the genus *Eriopus*; in *eriopoides* the ante- and postmedial lines are slightly more crenulate than in *thalpophiloides*, the postmedial being almost (minutely) dentate and more strongly bent outward about the subcostals; white dots on posterior end of reniform obsolete; pale subapical shade reduced to fine oblique pale dashes behind SC^4 and SC^5; horizontally dart-shaped dark streaks between the veins on terminal area, the streak behind R^2 almost completely covered by the pale mark, the one behind M^1 interrupted by a small whitish subterminal dash; a row of slight whitish lunules in interspaces just before termen; M more strongly tinged with pink than the other veins. Hind wing much whiter than in *thalpophiloides*, much as in *D. rectisecta*, Warr., Seitz' "Macrolep.," xi, p. 156, pl. xviiiH (1913) (India; W. Java), the interior dark shade extending almost into the cell; this peculiarity and the darker, more solid dark border are very noticeable beneath, where *eriopoides* is altogether much darker than *thalpophiloides*, only the dart-shaped terminal white mark on fore wing and the posterior-proximal half of hind wing standing out conspicuously pale.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂.

This insect forms an interesting link between *Data* and *Eriopus*, though by the build of the abdomen, as well as the hind wing, it almost certainly falls in the former genus. The scale-tooth at tornus of fore wing is hardly discernible, the termen more evenly crenulate than in most *Data* species ; abdominal crests almost wanting, but a little roughened hair suggests that they may once have been present.

15. *Eriopus repleta* Walk. postpallida subsp. nov.

♂, ♀, 38—41 mm.

Differs from typical *repleta*, Cat. Lep. Ins., xii, p. 865 (1857) (Punjab), in the rather larger average size and, more particularly, in the paler hind wing, which, in the ♂, is only suffused with fuscous near the terme from R^2 (obsolescent) to before tornus; postmedial line much mo visible above on the pale ground than in typical *repleta*. In the ♀ the hind wing is a little paler than in the typical ♂. In all three spemens of subspecies *postpallida* the fore wing has the white reniform slightly broadened and some additional white shading between costa and reniform; a white bar on costa at origin of antemedial line, which is distinctly angled inward at M; the white markings at apex and before middle of termen also a little broadened.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, tw ♂ ♂, one ♀.

This appears to agree perfectly in structure with Indian specimens of *repleta*.

16. *Thalatha sinens* Walk. ioleuca subsp. nov.

♀, 43 mm.

Appears to be a very large, fine race of *sinens*, Cat. Lep. Ins., xi, p. 746 (1857) (Burma). Fore wing with a rather strong pinkish-violet gloss; markings very similar to those of Chinese *sinens* in the Joicey Collection, but with hardly a trace of the black basal striga behind M, though the pale fuscous basal shade is present in fold: the double, crenulate ante- and postmedial lines are fairly well-defined and the dark striga from behind reniform to postmedial line is strong and strongly curved, joining a distinct dark shade from postmedial line to tornus; the postmedial line is followed by a diffused dark shade, which forms two detached, dentate marks, behind R^3 and M^1; a diffused, slightly dentate dark shade close to and following the line of termen. Hind wing above with a diffused postmedial line, nearly parallel with the termen. Underside much as in Chinese *sinens*; the typical form is unfortunately not before me, but Chinese specimens seem to agree well.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, a single ♀.

17. *Athetris* **alacra** sp. nov.

♂, ♀, 35 mm.

Closely related to *A. fasciata*, *Graphiphora fasciata* Moore, *Proc. Zool. Soc.*, 1867, p. 54 (Sikkim), from which it differs in the following particulars. Head, thorax and fore wing ivory-white tinged with greenish-grey, much paler than in *fasciata*; hair on segment 2 of palpus much more strongly contrasted, black on outer side, whitish in front and at tip. Fore wing with the subbasal line a little blacker than in *fasciata*, hardly double; the double antemedial slightly more oblique; medial shade almost erect from behind reniform to hind-margin; reniform strongly tinged with ochraceous, slightly broadened above, proximally produced along M by a white tooth only; orbicular a well-defined dark dot (or small spot); the four inner lines marked by blackish spots at costa, the medial spot broadened into a dark shade; subterminal line proximally defined by olive-yellow from behind SC^5 to M^2, by a darker shade in fold, the area between postmedial and subterminal lines not otherwise darkened. Hind wing almost white, with discal lunule and a curved postmedial line moderately well developed, the area beyond postmedial line weakly clouded with brownish-drab. Wings *beneath* ivory-white, the fore wing strongly irrorated with brownish-fuscous at middle of costa, in distal half of cell (and between SC and R^1 to postmedial line), from postmedial to subterminal lines as far as M^2 (except a pale spot on costa) and from the origin of R^3 to M^2 to the subterminal shade; a slight discal lunule and diffused, excurved postmedial line. Hind wing with some dark irroration at anterior half of costa and near apex; slight irroration throughout costal and terminal areas; postmedial line dark and strongly crenulate to behind R^1, thence much weaker, well crenulate; discal spot dark, slightly broken by a pale lunule on discocellulars.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂, one ♀.

This may possibly be no more than a local race of *A. fasciata*; but taking into account the very great similarity of many *Athetis* species and the rather strongly-marked differences between *fasciata* and *alacra* there has seemed insufficient ground for regarding it as such.

18. *Athetis* **albilineola**, sp. nov.

♂, ♀, 33—37 mm.

Section iv B of Hampson.

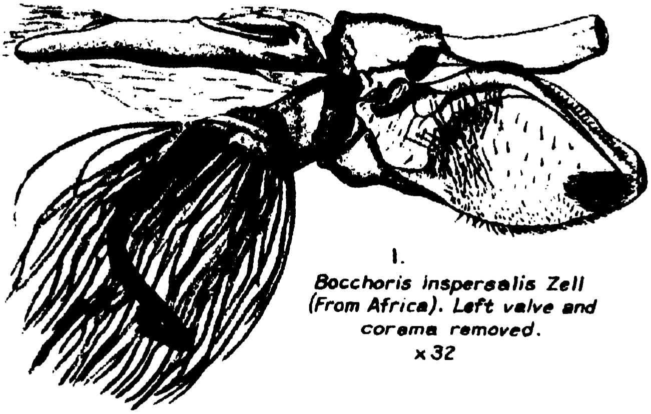
Head and body avellaneous (Ridgway, pl. xl) tinged with fawn colour l.c.) ; pectus, legs and abdomen beneath a little paler in tone.

Fore wing, pale vinaceous-lilac (pl. xliv) irrorated and shaded (especially at termen) with fawn colour; subbasal line represented by blackish spots at costa and in cell; an outwardly oblique black streak on costa at origin of antemedial line, which is obsolescent (apparently waved, excurved at middle) ; orbicular a short, thick, horizontal black streak (weak in one or two specimens) ; reniform irregular, very ill-defined except for a conspicuous, nearly horizontal white streak on its posterior edge ; sometimes with a more or less complete black outline and defined externally by some slight, whitish spots; medial line oblique from about two-fifths costa to reniform, very weak and inwardly oblique from reniform to hindmargin; postmedial line represented by an oblique black streak at costa and black spots on the veins, strongly bent outward behind costa and forming a wide curve to hindmargin ; anterior half of subterminal line almost lost in an oblique dark shade from apex to the postmedial line at R^3, present as a weak shade on posterior half of wing ; a slight bluish-white subapical shade anteriorly defining the oblique dark shade; termen with the usual interneural black spots, fringe avellaneous, with a pale line at base.

Hind wing whitish, slightly darkened towards termen, with a fairly distinct discal lunule.

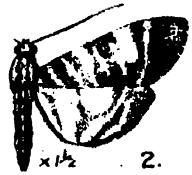
Underside whitish, the forewing and termen of hind wing slightly tinged with buff; both wings with a macular postmedial line and discal spot, which is minute on the fore wing, large and black on the hind wing.

Slopes of Mount Korintji, 7,300 feet, August-September, 1921, ten ♂ ♂ ; North Korintji Valley, 5,000 feet, September-October, 1921, one ♂, one ♀.



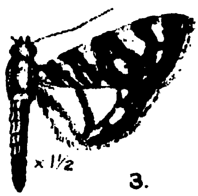
1.

Bocchoris inspersalis Zell (From Africa). Left valve and corema removed.
x 32



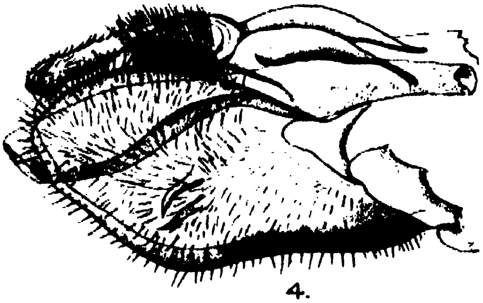
2.

Glyphodes kunupialis, spec. nov.



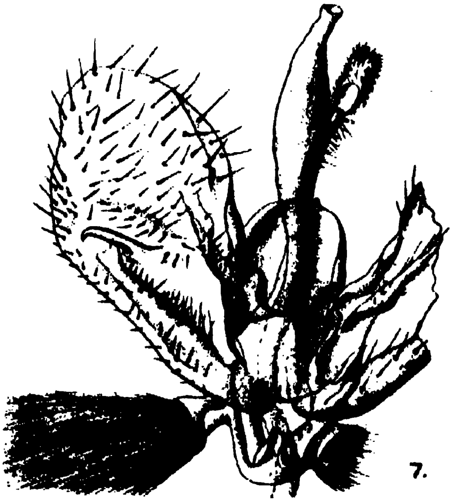
3.

Glyphodes anomala, spec. nov.



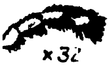
4.

Genitalia of G. anomala, side view. x32



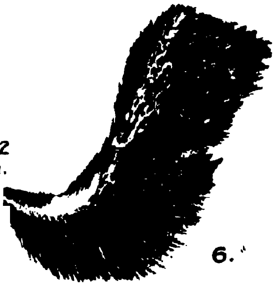
7.

Genitalia of G. anomala, ventral view.
x32.



5.

Max. palpus. x 32 of G. anomala.



6.

Labial palpus. x 32 of G. anomala.

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PYRALIDAE.

LIST OF PYRALIDAE COLLECTED BY MESSRS. C., F. AND J. PRATT, IN DUTCH NEW GUINEA, DURING 1920 AND 1921.

By A. J. T. JANSE, D.Sc.

Government Research Scholar, Union of South Africa; Hon. Professor of Systematic Entomology at the Transvaal University College, Pretoria.

Plate I.

VERY few of the species collected during this trip proved to be new to science, but the material collected was in good condition and from a distribution point of view of great interest. Only three species are here described as new, and this lack of novelties must be mainly attributed to the fact that only the larger and more conspicuous species of Pyrals were collected. This is a great pity, for, judging by my own collecting in South Africa, where such species are found, other even more interesting material must be obtainable, if the smaller stuff is not neglected and proper methods of collecting are employed. The lack of *Hydrocampinae*, *Schoenobiinae*, *Phycitinae* and *Crambinae* is very remarkable, and so is the poor representation of the *Pyralinae*. I ascribe this to daylight collecting and insufficient collecting with suitable lamp-light at night.

The preliminary notes on the classification of *Margaronia* and *Glyphodes* are still incomplete, but working the problem out to its fullest extent would have meant still longer delay in the publishing of the results of the Pratt collecting; so I decided to leave this for a future paper.

The material, together with the remaining Pyral material of the Hill Museum, has been kindly presented to my collection, together with the types, by its owner, Mr. J. J. Joicey.

1. *Agrotera pyrostrota* Hmpsn., *Ann. Mag. Nat. Hist.* (9), p. 172 (1912).

Mount Kunupi, Dutch New Guinea, Menoo Valley, Weyland Mountains, 6,000 feet, December, 1920, to January, 1921. Six specimens.

2. *Agrotera semipictalis* Kenr., *Proc. Zool. Soc. Lond.*, p. 78, pl. iv, fig. 80 (1907).

Mount Kunupi, December, 1920, to January, 1921. One specimen.

3. *Pagyda salvalis* Walk., Cat., xvii, p. 487 (1859).

Mount Kunupi, December, 1920, to January, 1921. Two specimens.

4. *Rhimphalea linealis* Kenr., *Proc. Zool. Soc. Lond.*, p. 79, pl. iv, fig. 86 (1907).

Mount Kunupi, December, 1920, to January, 1921. Two specimens.

5. *Syngamia marmorata* Lucas, *Proc. Roy. Soc. Queensl.*, viii, p. 92 (1894).

Mount Kunupi, December, 1920, to January, 1921. One female specimen.

6. *Caprinia diaphanalis* Walk., Cat., xxxiv, p. 1365 (1865).

Mount Kunupi, December, 1920, to January, 1921. Two specimens.

7. *Tyspanodes radiata* Kenr., *Proc. Zool. Soc. Lond.*, p. 80, pl. iii, fig. 108 (1907).

Mount Kunupi, December, 1920, to January, 1921, Four specimens.

8. *Nevrina procopia* Cram., "Pap. Exot.," iv, pl. ccclxviii, fig. E (1782).

Mount Kunupi, December, 1920, to January, 1921. One specimen.

9. *Phostria lasiocnemis* Hmpsn., *Ann. Mag. Nat. Hist.* (9), p. 329 (1912).

Mount Kunupi, December, 1920, to January, 1921. One specimen.

10. *Phostria basalticus* Led., *Wien. ent. Mon.*, p. 407, pl. xiv, fig. 11 (1863).

Mount Kunupi, December, 1920, to January, 1921. Thirty-three specimens.

11. *Botyodes brachytorna* Hmpsn., *Ann. Mag. Nat. Hist.* (10), p. 3 (1912).

Mefor Island, Geelvink Bay, Dutch New Guinea, August 15 to September 10, 1920. One specimen.

12. *Sylepta leucodontia* Hmpsn., *Proc. Zool. Soc. Lond.*, p. 718 (1898).

Mount Kunupi, December, 1920, to January, 1921. Two specimens.

13. *Sylepta crotonalis* Walk., Cat., xix, p. 997 1859).

Wandammen Mountains, 3,000-4,000 feet, Dutch New Guinea, November, 1914. One specimen.

14. *Sylepta acridentalis* Hmpsn., *Ann. Mag. Nat. Hist.*, x, p. 10 (1912).

Wanggar, S. Geelvink Bay, Dutch New Guinea, April-May, 1920. One specimen.

15. *Sylepta iopasalis* Walk., Cat., xviii, p. 652 (1859).

Mount Kunupi, December, 1920, to January, 1921. One specimen.

16. *Sylepta* spec.

Too much rubbed to be identified. Mount Kunupi. One specimen.

17. *Margaronia caesalis* Walk., Cat., xvii, p. 499 (1859).

Mount Kunupi, December, 1920, to January, 1921; Wandammen Mountains, 3,000-4,000 feet, November, 1914. Three specimens.

18. *Margaronia brunneomarginalis* Kenr., *Proc. Zool. Soc. Lond.*, p. 84, pl. iv, fig. 176 (1907).

Mount Kunupi, December, 1920, to January, 1921. Three specimens.

19. *Margaronia doleschali* Led., *Wien. ent. Mon.*, p. 402, pl. xiv, fig. 1 (1863).

Mount Kunupi, December, 1920, to January, 1921. One specimen.

20. *Margaronia exquisitalis* Kenr., *Proc. Zool. Soc. Lond.*, p. 84, pl. iv, fig. 175 (1907).

Mount Kunupi, December, 1920, to January, 1921; Wandammen Mountains, 3,000-4,000 feet, Dutch New Guinea, November, 1914. Seven specimens.

21. *Margaronia picticostalis* Hmpsn., "Moths of India," iv, p. 351 (1896).

Mount Kunupi, December, 1920, to January, 1921. One specimen.

22. *Margaronia hilaralis* Walk., Cat., xviii, p. 532 (1859).

Mount Kunupi, December, 1920, to January, 1921. Thirteen specimens.

23. *Margaronia laceritalis* Kenr., *Proc. Zool. Soc. Lond.*, p. 84, pl. iv, fig. 177 (1907).

Mount Kunupi, December, 1920, to January, 1921. Six specimens.

24. *Margaronia laticostalis* Guen., "Delt. and Pyr.," p. 303 (1854).

Mount Kunupi, December, 1920, to January, 1921.

25. *Margaronia eurytusalis* Walk., Cat., xvii, p. 503 (1859).

Mount Kunupi, December, 1920, to January, 1921. Eight specimens.

26. *Margaronia marginata* Hmpsn., "Ill. Het.," ix, p. 169, pl. clxxiii, fig. 23.

Mount Kunupi, December, 1920, to January, 1921. Eight specimens.

27. *Margaronia perspicualis* Kenr., *Proc. Zool. Soc. Lond.*, p. 83, pl. iv, fig. 174 (1907).

Mount Kunupi, December, 1920, to January, 1921.

28. *Margaronia nigripunctalis* Brem., " Lep. Ost. Sib.," p. 67, pl. vi, fig. 5 (1861).

Mount Kunupi, December, 1920, to January, 1921. Three specimens.

29. *Margaronia stolalis* Guen., "Delt. and Pyr.," p. 293, pl. iii, fig. 11 (1854).

Mount Kunupi, December, 1920, to January, 1921. Three specimens.

30. *Margaronia tricoloralis* Pag., J. B. Nass, p. 190 (1888).

Mount Kunupi, December, 1920, to January, 1921. Three specimens.

31. *Margaronia pfeifferae*, Led., *Wien. ent. Mon.*, p. 399, pl. xiii, fig. 13 (1863).

Mount Kunupi, December, 1920, to January, 1921. One specimen.

I have kept all the above species still in *Margaronia*, pending future investigation, but it is most likely that this genus will have to be split up in a number of quite distinct genera; see also under *Glyphodes*.

32. *Phlyctaenia bivitralis* Walk., Cat., xxxiv, p. 1365 (1865).

Mount Kunupi, 6,000 feet, December, 1920, to January, 1921. One specimen.

33. *Meroctena tullalis* Walk., Cat., xviii, p. 649 (1859).

Mount Kunupi, December, 1920, to January, 1921. Two specimens.

34. *Polygrammodes citrinalis* Hmpsn., *Ann. Mag. Nat. Hist.*, xi, p. 338 (1918).

Mount Kunupi, 6,000 feet, December, 1920, to January, 1921. One specimen.

35. *Boeotarcha* (?) *limbata* Butl., *Trans. Ent. Soc. Lond.*, p. 430 (1886).

Mount Kunupi, December, 1920, to January, 1921. Eight specimens. Wandammen Mountains, 3,000-4,000 feet, November, 1914. Four specimens.

I feel sure that this species is misplaced in *Boeotarcha*, and there is no reason why it should not be placed in the "omnibus group" *Margaronia*, as that genus stands at the present time. The only difference between the two genera according to the "Key" and the descriptions given by Sir George Hampson are, that the palpi in *Boeotarcha* are porrect, rostriform and projecting about two times the head, the frons should have a conical prominence (though Meyrick states in the original description that it is flat and oblique), while according to both authors veins 3, 4, 5 of the hind wing are closely approximated at base. In *Margaronia* the venation is practically the same, if one takes *unionalis* as the type, in fact there is so little difference that it would be insufficient to use them for subgeneric characters. The palpi, however, are in *unionalis* obliquely upturned with the second joint porrect and lying on the tuft of hair of the second joint. This is certainly different to the palpi of *B. taenialis* Snell, the type of *Boeotarcha*. Unfortunately I have no male of that species and cannot consequently compare the males of the geno-types of the two genera with one another.

Comparing now *limbata* Butl. with the type of either genera, I find it is much more a *Margaronia* than many of the other species placed in that genus. The palpi are *not porrect*, but obliquely ascending with the third joint somewhat porrect, though clearly visible on account of the rather scanty hair in front of the second joint. The venation gives no help and differs hardly from that of *unionalis*, the genitalia, though peculiar, do not differ sufficiently from those of *unionalis* to make a separation necessary, and the general appearance of the moth is absolutely like that of many *Margaronia* and totally unlike the type of *Boeotarcha*.

B. (?) *limbata* has in the male also a fold along the costa of the fore-wing, such as is often found among species at present placed in *Margaronia*.

However, more detail study of the two genera will be made in order to decide definitely whether the above view is correct.

36. *Omphisa* **robusta** sp. nov.

♂. Abdomen on upperside and greater part of fore and hind wings above ochraceous-tawny (xv); abdomen with orange-fuscous (ii) anal tuft; thorax with glossy bay (ii) coloured hairs and scales; abdomen tinged above with the same colour; vertex of head with woolly orange-fuscous scales; frons with dark bay-coloured hairs; palpi fringed with auburn ii) hairs in front, darker towards innerside; a narrow streak of ochraceous-tawny along hairs of first joint, third joint ochraceous-orange (xv) ; antennae dark bay-coloured above, lighter below ; tuft of basal joint with whitish scales at base and tipped with light orange-yellow (iii) scales ; tegulae covered with bay-coloured scales, tipped with sanford's brown (ii) ; patagia like thorax ; thorax below fuscous (xlvi) ; femora and tibia of all legs more of less densely covered with fuscous hairs, tibia streaked on outer side and the whole of the tarsi of all legs ochraceous-buff (xv) ; tarsi at joints ringed with warm buff (xv) ; spurs warm buff.

Fore wing: ground colour buckthorn-brown (xv), densely covered with dark bister (xxix) hairs and scales, except along costa and at a triangular patch between medial and postmedial lines and veins 1*b* to 10 ; this patch is roundly curved on inner side from upper angle to 1*b*, the outer line being parallel to outer margin, it is irrorated with orange-rufous (ii) scales and strigulated between the veins with dark bister ; costa also strigulated with dark bister ; basal and medial area uniform dark bister, except beyond middle of cell, where there is a round macula of light orange-yellow ; a small tuft of loose dusky-drab (xlv) scales between veins 5 and 6 on discocellulars, forming a round glossy macula ; medial area below lower median sparsely covered with similar hairs ; space between postmedial and outer margin uniformly covered with dark bister, forming an ill-defined broad marginal band.

Hind wing: like upper wing, but ground colour pale orange-yellow (iii) ; basal area thinly, medial area densely covered with dark bister hairs and scales ; area between medial and postmedial lines strigulated with dark bister and thinly irrorated with orange-rufous ; a broad outer-marginal area as in fore wing, but less dense and showing a certain amount of strigulation between the veins.

Underside: ground colour of both wings pale orange-yellow, densely suffused with ochraceous-buff (xv), except at inner marginal area of fore wing. Fore wing: costal area and broad outer-marginal band thinly irrorated with fuscous ; a fuscous-black triangular patch in cell at discocellulars, mixed with grey hairs as above, a lighter spot as on upper side before it ; just below it a quadrate fuscous-black irroration below vein 2 and a similar semicircular ill-defined spot just beyond it ; a series of thin lines between the veins from 1*b* to stalk of 8-9, consisting of rounded and elongated black dots and terminating at outer margin in diffused rounded dark bister spots ; veins and a little area beyond discocellulars thinly irrorated with ochraceous-orange. Hind wing like fore wing, but veins and area beyond discocellulars more densely irrorated with ochraceous-orange; costal area with broad irregular ill-defined dark fuscous strigae; a macula at end of cell as in fore wing; a broader macula consisting of strigae below it between veins 1*c* and veins 2, 5 and 6 and extended to base of wing in the cell; outer marginal spots as in fore wing; cilia of both wings above and below of dark bay colour, tipped here and there with white.

Exp. [illegible] mm.

Habitat.—Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, Dutch New Guinea, December, 1920, to January, 1921, [illegible] para-type November-December, 1920. C., F. and J. Pratt. [illegible]cies mostly resembles *Omphisa ingens* Hmpsn., but is much [illegible] and has dark outer marginal borders. I have not seen this species and am only judging from the description and the figure, but these are sufficiently clear to make the comparison certain. *O. robusta* differs, however, from the geno-type, *O. anastomosalis* Gn., in the palpi being obliquely, but distinctly upturned; the basal joint has a long pointed tuft in front, the second joint is more broadly scaled, the third joint is longer and stands in line with the second joint. In the fore wing veins 4 and 5 are approximated to one another for a short distance and vein 10 comes very close to the stalk of 8-9. In the hind wing 6 and 7 are on a stalk of one-sixth of vein 6; vein 7 is anastomosing with 8. This may prove to be sufficient to remove the species from *Omphisa*, but pending future investigation I leave it in the genus.

37. *G[illegible]hodes* **anomala** sp. nov. (pl. I, figs. 3, 4-7).

♂. Ground colour of head, thorax, abdomen and legs white; frons in middle, tegulae and patagia streaked with fuscous (xlvi); abdomen above with two lateral fuscous streaks, fifth segment above irrorated with fuscous and laterally with orange-buff (iii) scales, sixth and seventh segments above densely covered with orange-buff scales; fifth, sixth and seventh segments with a broad terminal band of silvery scales above, last segment with whitish and fuscous hairs mixed; seventh segment on underside slightly irrorated with fuscous; basal joint of antennae white in front, fuscous posteriorly; maxillary palpi fuscous, tipped with white; labial palpi with a triangular fuscous scaling on first joint, second joint broadly scaled with fuscous on upper part, third joint hidden in scales of second joint, with which it is in line, short and globular; antennae bi-ciliated, cilia over one; fore legs slightly streaked in front with maize-yellow (iv) and fuscous mixed.

Ground colour of both wings hyaline-white, with purplish sheen on upper and underside; markings fuscous, filled in with maize-yellow.

Fore wing: subbasal line double, very oblique, antemedial the same, but less oblique, leaving a broad line of ground colour and tapering towards inner margin; medial line double, curved inwardly at 1*b* and there confluent with outer antemedial line; at costa a loop is formed around the reniform and continued to vein 2 as a double streak joining the postmedial; reniform in centre slightly lighter; postmedial line double, broad near costa, angulated at vein 6 and oblique to vein 2, where it joins the previous line; area below it densely irrorated with fuscous-black (xlvi), leaving a rounded spot of ground colour between lower-median and 1*b* and a narrow mark below centre of postmedial between vein 2 and inner margin; beyond postmedial line a rounded patch of ground colour from costa to vein 6 and a narrower one between vein 5 and 3, both being surrounded on all sides by fuscous and continued as a fuscous band to inner margin, irrorated with fuscous-black below vein 2 and with a narrow maize-yellow irregular line beyond it; a subterminal slightly broader maize-yellow line beginning on vein 8 beyond first patch, parallel to costa, curved at apex and then parallel to outer margin, and ending at 1*a*; space between this and previous line broadly filled in with fuscous; double postmedial lines, subterminal line, and space above terminal line near apex black between stalk of 8, 9 and costa; this line is continued from apex to near tornus as a fuscous-black terminal line; cilia light at base, then fuscous for one-third, then olive-brown (xl), mixed with white scales.

Hind wing: some fuscous irroration on lower median as far as vein 2 and a broad fuscous irroration between 1*a* and 1*b* from base to postmedial line; an oblique fuscous band from near costa at before middle across discocellulars to postmedial outer band; postmedial double, filled in with ground colour, outer band getting broader at below vein 2, where it joins the previous band, from there continued as a broad band of ground colour to tornus and slightly angulated at 1*b*; outer band from near costa, broad between veins 8 and 5 enclosing a small irregular spot of maize-yellow, then becoming narrower and confluent with previous line at below vein 2, enclosing an irregular oblong macula of ground colour; beyond it a narrow irregular maize-yellow line as in fore wing, followed by an irregular fuscous band from costa (where it is broadest) to 1*c*, beyond this a broad irregular subterminal yellow band, broadest between veins 5 and 6, followed by a fuscous-black terminal band, as in fore wing; cilia as in fore wing.

Underside: markings as on upper side, but less defined and purplish gloss more pronounced.

This species resembles *G. multilinealis* Kenr. very much, but differs in the absence of a light continuous postmedial area, and it has a more developed terminal area in the hind wing. In pattern it also resembles *Bocchoris insulalis* Hmpsn. = *paucilinealis* Kenr., but differs from this species also in the postmedial areas of the fore wings.

Exp. ♂, 29 mm.

Habitat.—Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, Dutch New Guinea, December, 1920, to January, 1921, C., F. and J. Pratt.

Two ♂♂.

Of the paratype a genitalia preparation was made (pl. I, figs. 4, 7) showing the following characters: Valvae suboval, upper margin well arched, apex rounded, lower margin with a rounded bulge at middle and a smaller one near base; a curved spine at middle on inner side; a ridge from base to below the spine at one-third, covered with hairs, another shorter fold above it at over two-third, inner- and outer-side covered with spiny hairs, irregularly placed; uncus long, curved at base, and just projecting beyond apex of valves, terminal half club-shaped and hollow, having an opening at lower- and upper-side; vinculum well developed and with a projecting tooth at middle of which the sides are curved downwardly; coremata consisting of dense long dark, straight hairs; aedoeagus feebly chitinised.

This species resembles *Bocchoris insulalis* Hmpsn. to such an extent that I thought it at first to come in that genus, but on comparing it with the description given of this genus, and after studying the type of *Bocchoris* I came to the conclusion that it has to come in the large *Margaronia* group together with several others now still placed in *Bocchoris*. *B. inspersalis* Zell. (the type of the genus) (pl. I, fig. 1), of which the African and Indian forms were studied, and which proved to be the same, has the fore wing with vein 7 straight and removed from the stalk of 8, 9, while the hind wing has 6 and 7 shortly stalked (not from angle as given by Hampson). The valves are simple and without the characteristic thorn as found in *G. anomala*, and in all the other species now placed in *Bocchoris*, but which I consider should be removed from there; *it has no uncus*, which in the other species is long and curved as in most *Glyphodes* species if not all, and the coremata have a characteristic stiff bundle of hairs between the other hairs, the end of which is sharply curved inwardly. Such a hair-bundle is not found in those species, which I consider have to be removed, and among which are *telphusalis* Walk., *insulalis* Hmpsn., *sphenocosma* Meyr., and probably several others, which I have not closely examined yet. In comparing Hampson's definitions of *Bocchoris* and *Margaronia* we find that in the former the palpi have the third joint upturned, short, and with a triangular tuft in front, maxillary palpi filiform, frons flat and oblique, outer spurs of tibia half length of inner, vein 7 of fore wing straight and well separated from 8, 9, while in the latter the third joint of the palpi should be porrect and lying on the hairs of the second joint, maxillary palpi are triangularly scaled, frons rounded, and 7 of fore wing is curved and closely approximated to stalk of 8, 9, and the outer spurs of the tibia are less than half the inner.

In studying well over a hundred species placed by Hampson in the genus *Margaronia* I find that only about 50 per cent. of the species have the palpi as desired, in fact the greatest diversity may be found among them, so much so, that I fear that the classification mainly based on the palpi, as given by Sir George for the *Pyraustinae*, will ultimately require a drastic revision. Also, within the genus *Margaronia*, the maxillary palpi are not as uniform as given by Hampson, some being three jointed, others having four joints, while the most abnormal structure in them is found in *quadristigmalis* Kenr., and *sabacusalis* Walk. In *B. inspersalis* Zell. they are four jointed, somewhat curved and covered with somewhat appressed scales, but this type of palpus is often found in *Margaronia* species and only in *B. insulalis* can one consider this palpus to be really filiform. If the palpi are used as a basis of classification, a large number of genera have to be formed, but then the *external appearance must not be taken for structure*; the real structure can only be made out *with certainty* by making microscopic mounts of them, as I have done in all species studied.

I am not prepared yet to suggest such a natural grouping, as the study is not completed in conjunction with other structural characters, especially genitalia, but I am convinced already that many of the old generic names can be used for several such groups of generic rank. I have hopes that the study of the genitalia will provide data of a sounder nature than those which the palpi supplied, and I have no doubt that in the present case they distinctly point to a removal of such species as *insulalis*, *telphusalis* and *sphenocosma* from *Bocchoris* to the *Margaronia* group, considering this group as of super-generic rank. The absence of the uncus is, I think, of greater importance than whether the third joint is porrect or not, even if this character was constant, which I found not to be case, and, taken in combination with other characters, it is quite sufficient to define the genus *Bocchoris*, with the result of throwing out a very large number of species now placed there. The absence of the uncus was found in well-defined groups of *Tortricidae* by Heinrich, and by Pierce in that family and in the *Geometridae* (*Acidalia*).

In order to define the particular group of *Margaronia* in which *anomala* and the next species *kunupialis* have to come, a more detailed study of some of Hampson's groups was made and it was found to agree best in all respects with *stolalis*, the type of the *old genus Glyphodes*, as given by Hampson in *Proc. Zool. Soc. Lond.*, p. 731, 1898. However in his MS. notes and in the collection at the British Museum, Sir George has now changed all *Glyphodes* names into *Margaronia*, as has been done by him during the last number of years of office with many other genera. One has to admire the energy displayed by Sir George in this changing of names and the persistency with which it was done by him right through the collection and in all his MS. work, but unfortunately it did not leave sufficient time to write down *why* it was done. As far as I can make out, the question hinges on whether the generic names in Hübner's "Verzeichniss" were described or not and in 1898 Sir George decided they were not described. For this decision I see no reason, however. No doubt the genera were badly defined, according to modern views, but so were most, if not all, the generic and specific definitions of those days and of much later (Walker's, for instance), and so will perhaps our own definitions be considered in time to come. Even the more recent Felder generic names could scarcely be retained, seeing that they are practically based on the figures of the species only. I think the question is: Can the species be recognized with certainty? If so, retain the name by all means. Seeing that Hübner's type of *Margaronia*, *unionalis* Hübn., is a well known species, about which I think no doubt exists, I see no reason for sinking the generic name as has been done. In a future paper I hope to show more fully that *Margaronia* and *Glyphodes* have very little in common with one another, and many other supposed synonyms of *Margaronia* besides, but for the time being I have sufficient data to retain at least *Glyphodes*, with the type *stolalis*, as a good genus, using it for *anomala* and *kunupialis* in the restricted sense, which excludes such species as *unionalis*. I also place the following species in this genus: *polystrigalis* Hmpsn., *pryeri* Butl., *pyloalis* Walk., *sibillalis* Walk., *caesalis* Walk., *paramicalis* Kenr., *basifascialis* Hmpsn. *umbria* Hmpsn., *agathalis* Walk., *multilinealis* Kenr., *crithealis* Walk. and probably a number of others which have not been studied yet.

38. *Glyphodes* **kunupialis** sp. nov. (pl. I, fig. 2).

♂. Ground colour of head, thorax, abdomen, legs and wings, above and underneath white; frons with a broad fuscous band; first joint of antennae at base and the vertex of head covered with fuscous hairs; antennae biciliated for a little over one; palpi with a broad fuscous-black band at end of first joint, second joint almost entirely scaled with fuscous-black; maxillary palpi triangularly scaled, fuscous-black at base; patagia on both sides and tegulae at lower part edged with fuscous; two lateral fuscous stripes on abdomen on upperside; second to seventh segments terminally edged with fuscous on underside, on upperside narrowly edged with white; only one fore leg is present, which has the femur irrorated with fuscous above and the tibia with fuscous at the lower half; all markings of fore and hind wings fuscous on white ground colour.

Fore wing: basal third of wing fuscous, the outer edge very oblique, leaving two narrow, white lines parallel to outer edge at one-third and two-thirds; a broad fuscous band at middle of wing from costa to inner margin, inner edge incurved from costa to lower median and from lower median to inner margin, leaving a broad irregular white band, narrowest at 1*b*, outer edge excurved between costa and vein 3, just below which it joins the postmedial band; an oval white ring in this band from just below costa to vein 1*b*, slightly incurved between veins 3 and 6, thus enclosing the discocellulars; postmedial line rather narrow, broad between costa and vein 5, then curved to join previous patch, thus leaving a white macula between costa and till below vein 3, where it is rounded; a narrow, irregular, very erect, white band beyond it; terminal area entirely filled in with fuscous; cilia white at base with a fuscous line across middle of it.

Hind wing: a fuscous irroration from base to near tornus between 1*a* and 1*b*; a triangular fuscous patch from tornus to lower median, continued as a discocellular streak; from lower angle outwardly this patch is slightly hollowed out below vein 3 and continued as a line to the costa at middle; this line bulges a little inwardly between veins 4 and 6, thus leaving a white kidney-shaped marking before it; postmedial line consists of a broad fuscous irroration from costa to before tornus; inner edge regular and curved at plical fold, outer edge irregular and incurved between discal fold and vein 2; terminal area suffused with fuscous, broadly near costa where it joins the postmedial, then getting narrower towards tornus, leaving before it a curved, white, subterminal band, which is ill-defined between discal fold and vein 3 and well-defined between vein 3 and tornus; cilia as in fore wing.

Underside: fore wing as above, but less clearly defined, especially along inner-marginal area; hind wing almost entirely white, except a streak at discocellulars; a well defined, irregular medial band, which follows the outer part of the medial line on upperside; this band is broad between 1*b* and vein 2, veins 5 and 7; postmedial as on upperside, but narrow and ill defined; terminal area only shaded with fuscous at apex as far as vein 4.

Exp. 27 mm.

Habitat.—Mount Kunupi, Menoo Valley, Weyland Mountain, 6,000 feet, Dutch New Guinea, December, 1920, to January, 1921. Collected by C., F. and J. Pratt. One ♂ only.

This species resembles in general appearance and markings *B. telphusalis* Walk., but the medial oval ring of fore wing and the different postmedial light coloured lines are different. In the hind wing the terminal area shows no ground colour, but is correspondingly irrorated with yellow. As stated before, *telphusalis* Walk. should be removed from *Bocchoris* and placed in *Glyphodes*.

G. kunipialis also resembles *G. critealis* somewhat as far as the pattern in general is concerned, but in this species less ground colour is left in the fore wing, and also less in the terminal area of the hind wing. Moreover the ground colour of both species is not extended to the costa, nor is it as broad as is the case with *kunupialis*. In this respect it resembles *G. pryeri* Butl. more.

39. *Heortia dominalis* Led., *Wien. ent. Mon.*, p. 402 (1863)
Mount Kunupi, December, 1920, to January, 1921. Three specimens.

40. *Pyrausta leucula* Meyr., *Trans. Ent. Soc. Lond.*, p. 89 (1897).
Mount Kunupi, December, 1920, to January, 1921. One specimen.

HYDROCAMPINAE.

41. *Aulacodes acroperalis* Hmpsn., *Trans. Ent. Soc. Lond.*, p. 177 (1897).
Mount Kunupi., December, 1920, to January, 1921. One specimen,

PYRALINAE.

42. *Cosmethis griseata* Kenr., *Proc. Zool. Soc. Lond.*, p. 75, pl. iii fig. 45 (1907).

Mount Kunupi, December, 1920, to January, 1921. Sixteen specimens.

43. *Cosmethis suradeva* Moore, "Lep. E.I.C.O.," p. 299, pl. 7*a*, fig. 7 (1858).

Mefor Island, Geelvink Bay, Dutch New Guinea, August-September 1920. One specimen.

44. *Cosmethis temerata* Swinh., *Ann. Mag. Nat. Hist.* (18), p. 413 (1906).

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, Dutch New Guinea, December, 1920, to January, 1921. Two specimens.

45. *Vitessidia diaphana* R. & J., *Nov. Zool.*, xii, p. 475 (1905).

Mount Kunupi, December, 1920, to January, 1921. Twenty-three specimens.

POCOCERINAE.

46. *Macalla plumbeopictalis* Hmpsn., *Ann. Mag. Nat. Hist.*, ser. 8, vol. xviii, p. 143 (1916).

Wandaman Mountains, 3-4,000 feet, November, 1914. One specimen.

47. *Macalla argenteorubra* Hmpsn., *Ann. Mag. Nat. Hist.*, ser. 8, vol. xviii, p. 138 (1916).

Mount Kunupi, December, 1920, to January, 1921. Five specimens.

48. *Stericta rurealis* Kenr., *Proc. Zool. Soc. Lond.*, p. 548, pl. lxviii, fig. 2 (1912).

Mount Kunupi, December, 1920, to January, 1921. Three specimens.

Arfak Mountains, 6,000 feet, March, 1914. Two specimens.

49. *Sterricta flammealis* Kern., *Proc. Zool. Soc. Lond.*, p. 72, pl. iii, fig. 29 (1907).

Wandaman Mountains, 3-4,000 feet, November, 1914. One specimen.

GALLERIANAE.

50. *Ethopia roseilinea* Walk., Cat., xxxi, p. 233 (1863).

Mount Kunupi, Menoo Valley, Weyland Mountains, 6,000 feet, December, 1920, to January, 1921. One specimen.

LEPIDOPTERA COLLECTED DURING A ZOOLOGICAL MISSION TO THE GREAT ATLAS OF MOROCCO, 1927.

By F. Le CERF and G. TALBOT.

By G. TALBOT.

The Great Atlas is still little known zoologically, and especially its entomology. With the object of collecting various orders of insects, particularly Lepidoptera, our expedition was organized to explore the southern slopes of the range, where hardly any collecting had been done; in the more southern districts no one had hitherto made collections.

We are greatly indebted to the authorities of the Paris Museum and of the Institut Scientifique Chérifien at Rabat for obtaining the necessary authorization to penetrate closed territories; without this we could never have penetrated to the Sous and to the districts of the Goundafa and Glaoua. We were accorded the privilege of an official Mission.

The Institute at Rabat also very kindly lent us their Chaouch Larbi Ben Abid, who had already accompanied Admiral Lynes on his ornithological trip to the Sous in 1924. As Larbi spoke Chluh, Arabic and French, he was invaluable as our interpreter, and also very useful in collecting and many other ways.

The cost of the expedition was defrayed by Mr. J. J. Joicey, and all the types and unique specimens of Lepidoptera obtained are in his collection. Other orders of insects, &c., are placed in the Museum of Paris, and in the Institute at Rabat.

We arrived at Taroudant via Rabat, Casablanca, Mogador, and Agadir, on the evening of April 14. The weather was hot and dry, and no rain had fallen for fourteen months. Collecting on the plain of the Sous was therefore poor and only twelve species of butterflies were obtained.

Owing to various delays, our caravan did not leave for the mountains until April 28. We had lent us two Mokazenis (armed guards) without whom we were not allowed to travel; we also engaged a boy from Taroudant, and six mules with two muleteers.

Our first objective was Tenfecht, about 25 miles, and this took twelve hours. We were very hospitably received by the Kaid Medemi, and remained here till May 2. The country was still dry, and the collecting a little better than at Taroudant. Night work was only slightly productive.

Our second objective was Aguerd-el-Had. We were well received by the Sheik Mohammed. Collecting was perhaps not so good as at Tenfecht, and we were not allowed to put the lamps on as the district was temporarily unsettled. Stayed here till May 5, when we left for Sinis, passing through the wonderful gorge of the Oued Nourail. The collecting at Sinis was poor, both by day and by night. The country was rather open and very dry. At this place I had to leave the caravan and return to Taroudant and Marrakech on account of eye-trouble. Mons. Le Cerf carried on and completed the programme as arranged, which was to proceed along the southern slopes as far as Asni, and then to work some mountains in the Glaoua country. As far as Tafingoult the date palm is found in numbers, but farther on it disappears as the country becomes higher. At Tizi N'Test up to 2,500 m. the southern slopes still show the characteristic zerophytic vegetation of the Sous. Much fog and rain was experienced here. At Taguendaft, the party stayed only one night at the Kasbah of the Goundafa, as various difficulties prevented collecting. Further on at Tinmel a stay of eight days was made, and excellent collecting was obtained both by day and by night. Asni was reached on May 26 and a new caravan of five mules and five muleteers was formed, and two Mokazenis obtained from Marrakech. This caravan left for Arround in the Glaoua country on May 29. Some good species were obtained during a stay of three days in this village, including *C. vaucheri*, *Pieris napi segonzaci*, *Ocnogyna*, sp. nov., &c.

A stay was made at Ouaounzeurt, reached by an arduous climb over the snow-covered Col of the Tizi N'Taghrat at about 3,500 m. An excursion was made to Lake Ifni at about 2,900 m.

Leaving Ouaounzeurt, Tachdirt was reached in one day, crossing the Col of the Tizi Oumchika (about 3,200 m.), and the Col of the Tizi N'Likoumt (about 3,500-3,600 m.). Collecting was done on the southern slopes of the Djebel Tachdirt, and on the north slopes of the Djebel Likoumt. Fine series of *Pieris segonzaci*, *Coenonympha vaucheri*, *Melitaea cinxia atlantis.*

The caravan reached Asni from Tachdirt in one day, and was dispersed at Marrakech on June 4.

The route traversed was much too long to do any thorough collecting in the time at our disposal. A general idea of the distribution of many forms was obtained, as well as confirmation of the non-existence of an alpine flora, and of the absence of the genera *Parnassius* and *Erebia*. For further notes see the *Entomologist* for August, 1927.

In working out the butterflies I am pleased to acknowledge useful assistance rendered by Captain N. D. Riley of the Nat. Hist. Mus. in comparing some specimens with those in the Oberthür Collection, and in giving his opinion on the Hesperiidae. The family of the Pyralidae will form the subject of a later paper.

The Lepidoptera of Morocco in comparison with that of Algeria has been fully dealt with by Lord Rothschild and the late Charles Oberthür. Much more work remains to be done in Morocco in collecting Heterocera.

We have not given references to all original authors, where these are easily accessible elsewhere, especially in the papers by Rothschild.

The Microlepidoptera have been dealt with by Mr. E. Meyrick and the results will be published in due course. Two genera and twelve species are new to science.

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ROUTE TAKEN. *Collecting posts

*Taroudant (Plain of the Sous, about 30° S. Lat.).
Bou-el-Hadjlat (Foothills).
Agadir Ouzour (south of this place).
*Tenfecht.
Afensour.
*Aguerd-el-Had.
Oued Nourail.
Ait Daouet.
Taziaint.
*Sinis.
*Tafingoult.
Tachguelt.

Route Taken—*continued.*

*Tizi N'Test.
Kessariat.
Imechgaguen.
Tamzat.
*Taguendaft.
Taoust.
El Khemis.
*Tinmel.
Imertaoum.
Tergal.
El Gueurour.
Tagadirt N'Bourd.
Ouirgane.
*Imarera.
Asni.
Tagadirt.
Matat.
Ait Izouka.
*Arround.
Tizi N'Taghrat.
*Ouaounzeurt.
*Lake Ifni.
*Djebel Likoumt.
*Tachdirt.
Amsakrou.
Asni.

List of Localities where Lepidoptera were Obtained.

AA: Bu Ragrag, Rabat, 10, iv.
A. Taroudant, Sous district, 20-24, iv.
Fields on the plain, very dry.
B. Taroudant, at light in garden of the " Bureau," 25, iv.
C. Tenfecht, Sous district, 3,000-4,000 feet, 30, iv-1, v.
D. Aguerd-el-Had, Sous district, 3,400 feet, valley of a stream, north side, 3-4, v.
E. Sinis, Sous district, 2,800 feet, at light on the plateau, 6, v.
F. As E, not at light, 7, v.
G. Tafingoult, 1,100-1,400 m., 9-10, v.
H. Tizi N'Test and Djebel Imress, 2,000-2,450 m., 11-14, v.
I. Kasbah Taguendaft, 2,000-2,450 m., 16, v.
J. Tinmel, zone of lavenders, 17-23, v., at light.
K. Tinmel, 18-24, v, zone of lavenders.
L. Imarera (Skoutana), 26, v.
M. Arround, 2,000 m., 29, v., at light.
N. Arround, east slopes to 2,500 m., 30, v.
O. Arround, west slopes, 2,200 m. Wind and cold fog. At light, 30, v.
P. Arround, east and south-east slopes to 2,500 m., 30, v.
Q. Lake Ifni, south edge below the lake, 2, vi.
R. Ouaounzeurt (Tifnout), on slopes by stream, 3, vi.
S. Azib Oued Tifnit, and south slopes of Djebel Likoumt, 4, vi.

T. Tachdirt and southern slopes of Djebel Tachdirt, 2,500-2,600 m., 5, vi.

U. Djebel Likoumt, north side, 2,500-3,200 m., 6, vi.

V. Djebel Tachdirt, southern slopes, 2,450-2,500 m. Moon and wind, at light, 6, vi.

W. Djebel Tachdirt, southern slopes, 2,400-2,600 m., 7, vi.

X. Korifla and forest of the Zaers, 17, vi, Mess. Théry and Le Cerf.

SPECIES NOT PREVIOUSLY RECORDED FROM GREAT ATLAS.

Marked with an asterisk in the list.

1. *Papilio podalirius lotteri* Aust.
2. *Euchloe belia algirica* Ob.
3. *Anthocharis eupheno androgyna* Leech.
4. *Gonepteryx cleopatra* L.
5. *Colias electo croceus* ♀ f. *helicina* Ob. (not recorded from Morocco)
6. *Melitaea phoebe punica* Ob.
7. *Heodes phlaeas* L.
8. *Syntarucus telicanus* Lang.
9. *Tarucus theophrastus* Fbr.
10. *Lycaena bellargus punctifera* Ob.
11. ,, *melanops alluaudi* Ob.

Species found at Taroudant on the plain, and in the Sous on the southern slopes of the Atlas to 4,000 feet, between Tenfecht and Sinis. Latitude 31° to 30° S. T = Taroudant.

Pieris rapae mauretanica Vty. T.
Pontia daplidice albidice Ob. T.
Euchloe belemia f. *glauce* Hbn. T.
Anthocharis charlonia Donz. T.
Gonepteryx cleopatra L.
Colias electo croceus L. T ; ♀ f. *helice* Hbn. T. and *helicina* Ob.
· *Pararge aegeria meone* Crm.
,, *megera* L.
Heodes phlaeas L. T.

Lampides boeticus L. T.
Syntarucus telicanus Lang.
Tarucus theophrastus Fbr. T.
Azanus jesous Guér. T.
Zizeeria lysimon Hbn. T.
Cyaniris argiolus algirica Ob.
Lycaena baton abencerragus Pierr.
  „ *astrarche calida* Bell.
  „ *icarus celina* Aust.
Carcharodus alceae Esp. T.

These species have not, to our knowledge, been previously recorded so far south in Morocco.

(*To be continued.*)

LEPIDOPTERA COLLECTED IN THE REPUBLIC OF ANDORRA AND IN THE NEIGHBOURING PYRENEES.

By G. TALBOT.

THE specimens were collected by me during a visit paid to Andorra in 1926. Collecting was done also at Hospitalet on the French frontier, and at Porté farther east.

As I did not arrive on the ground until August 19, I was too late for some things and the *Argynnis* group was nearly over. Andorra is not accessible till about the first week in July, but collecting should start in the second week.

At Hospitalet the Hotel Soulé is comfortable enough but is minus bath; in Andorra, things are more primitive. The main road to Spain passes Hospitalet, a village of 125 inhabitants, situate at about 4,000 feet. The road winds its devious way up the mountain to the Col Puymorens (over 6,000 feet), where it descends to Bourg-Madame and Puigcerda. At one point this road joins another going over the Embalire Pass to the hamlet of Soldeu in Andorra. Several days were spent at Hospitalet in collecting on the mountain slopes, the west side being the most productive.

The first trip into Andorra was made from here by way of the Port Dret (8,000 feet), where a large area of snow still remained. Here one obtains a wonderful view of the Andorran mountains and a descent of about 3,000 feet brings one to the car road and so to Soldeu. Here the single and primitive inn (fonda) afforded accommodation. The dinner was plain and plentiful, with fresh trout from the stream.

The day following was occupied in walking to Andorra la Viella, the capital of the Republic. The route led through the picturesque valley of the Valira del Oriente, and here butterflies were very plentiful, besides lizards which swarmed over the sun-baked rocks. At Encamp an excellent lunch was obtained at the Hotel Mas.

The return journey from Andorra la Viella to Hospitalet was made across country from Encamp, and involved an arduous tramp over high plateaux and the crossing of the Col dels Cortals (about 8,000 feet) and of the Col de l'Eurbalire (about 7,000 feet). The day was very hot and many fine Lycaenidae were obtained. The descent by the Ariège river to Hospitalet was made for the most part in darkness, aided a little by a low moon, and fortunately I escaped the heavy mist which came up the sides of the valley. An Izard or Pyrenean Chamoix was disturbed feeding, and enormous herds of cattle provided an obstacle to rapid progress.

Another visit was afterwards made to Andorra by way of Puigcerda and Sao d'Urgel, and collections made between Las Escaldas and Encamp. The weather broke and continuous heavy rain caused my premature return to Hospitalet and Paris. This time the journey was made from Las Escaldas to Hospitalet by horse in half a day. At Las Escaldas the Hotel Plàs, where English is spoken, is to be well recommended.

No night work was undertaken. The few moths recorded were disturbed or were flying in the day-time.

LOCALITIES REFERRED TO IN THE LIST.

Pyrenees.—A. Hospitalet district, between this village and frontier of Andorra by the Ariège river, and on the mountains on either side of the village ; 4,000-5,000 feet, 19-30, viii.

B. Porté to Porta, about 4,000 feet, 29, viii.

C. Hospitalet to Soldeu by way of the Port Dret, mostly on mountain pasture, 5,000-8,000 feet, 20, viii.

Andorra.—D. Soldeu to Andorra la Viella, valley of the Valira del Oriente, 3,000-5,000 feet, 21, viii.

E. Encamp to the Porte d'Embalire by way of the Col dels Cortals, on high mountain pasture, 4,000-7,000 feet, 22, viii.

F. Las Escaldas to Encamp, 3,000-4,000 feet, 3, ix.

PAPILIONIDAE.

1. *Parnassius apollo pyrenaicus* Harc.

A series of both sexes from locs. A and B.

One ♀ is exceptionally dark, and another is almost as light as the ♂.

PIERIDAE.

2. *Leptidia duponcheli* f. *aestiva* Stgr.

Loc. D, one ♀.

3. *Pieris brassicae* L.

Loc. A, one ♂.

4. *Pieris rapae* L.

A series of both sexes from locs. A, B, F.

5. *Pieris manni* f. *rossi* Stef.

Loc. C, one ♀ very strongly marked.

6. *Synchloe daplidice* L.

Locs. A, a series of ♂ ♂ ; B, a series of ♂ ♂ ; D, one ♀ .

7. *Colias croceus* Fourc.

A series of both sexes from locs. A, B, C, D, F.

An aberration of the typical ♀ with all submarginal spots on fore wing well marked, and two additional spots in cellules 3 and 1*c*.

♀ f. *helice* Hubn.

Loc. A, four ♀ ♀ .

8. *Colias hyale* L.

Locs. A, one ♂ ; B, two ♂ ♂ .

9. *Colias phicomone* Esp.

Loc. C, one ♂ rather dark.

NYMPHALIDAE.

10. *Argynnis lathonia* L.

A series of ♂ ♂ from locs. A, B, D, E.

11. *Argynnis aglaia* F.

A series of both sexes from locs. A, E.

12. *Argynnis niobe* L.

Loc. E, one ♂ .

13. *Argynnis adippe* f. *cleodora* O.

Loc. A, one ♂ .

14. *Argynnis paphia* L.

Locs. A, one ♂ ; F, one ♂ .

15. *Argynnis ino* Rott. *pyrenaica* Sagarra.

Bull. Inst. Catal. (2) v, p. 271 (1925) (Catalonia).

Locs. A, four ♀ ♀ ; E, eight ♂ ♂ , three ♀ ♀ .

The specimens from Hospitalet do not appear to differ from the Andorra ones.

16. *Argynnis selene* Schiff.

Loc. A, one ♂ .

17. *Melitaea didyma* O.

Locs. A, one ♂ ; D, one ♂ , one ♀ .

18. *Melitaea pseudathalia* Rev.

Bull. Soc. Ent. France, 1920, p. 320.

Loc. A, one ♂.

19. *Pyrameis atalanta* L.

Locs. A, one ♂, one ♀; D, one ♀.

20. *Pyrameis cardui* L.

Loc. A, one ♀.

21. *Vanessa io* L.

Loc. A, one ♂.

22. *Vanessa urticae* L.

Locs. A, one ♂; C. one ♂; D, one ♂.

23. *Vanessa antiopa* L.

Loc. A, one ♀.

SATYRIDAE.

24. *Erebia epiphron pyrenaica* H.-S.

A series of both sexes from Locs. A, C.

25. *Erebia constans* Effinger (Elwes, i, l.).

Loc. A, one ♂, four ♀ ♀.

26. *Erebia stygne* O.

Loc. A, a small series of both sexes.

27. *Erebia gorgone* Bdv.

Locs. A, two ♂ ♂; E. one ♂.

28. *Erebia neoridas margarita* Ob.

A series of ♂ ♂ from locs. B, D, F.

29. *Erebia euryale* Esp.

A series of both sexes from locs. A, C.

30. *Erebia tyndarus pyrenaica* Ruhl.

A series of both sexes from locs. A, E

31. *Melanargia galathea* L.

Loc. A, one ♀.

32. *Satyrus alcyone pyrenea* Ob.

Loc. D, two ♀ ♀ on limestone.

33. *Satyrus actaea* Esp.

Loc. D, five ♂ ♂, two ♀ ♀ on rocky slope.

34. *Pararge megera* L.

Loc. A, one ♀.

35. *Pararge maera adrasta* Hbn.

A series of both sexes from locs. A, B, C, D, F

36. ***Epinephele jurtina*** L.
A series of nine ♀ ♀ from locs. A, B, E.

37. ***Epinephele lycaon*** Rott.
Loc. A, one ♂.

38. *Coenonympha iphis* W.V.
Locs. A, two ♂ ♂, seven ♀ ♀ ; C, three ♂ ♂.

39. *Coenonympha arcania* L.
Loc. A., five ♂ ♂, three ♀ ♀.

40. *Coenonympha arcania* form ?
Locs. E, one ♂ ; F, one ♂.
The white band on hind wing below is much broader.

41. *Coenonympha pamphilus* L.
A series of both sexes from locs. A, B, C, E.

LYCAENIDAE.

A special article on this group is being prepared by Mons. Stampffer.

HESPERIDAE.

I am indebted to Capt. N. D. Riley for these determinations.

To follow later

HETEROCERA.

ARCTIIDAE.

1. ***Ilema complana*** L.
Loc. A, one ♂.

2. ***Callimorpha quadripunctaria*** Poda (= *hera* L.).
Loc. E, one ♀ on the wing 9 a.m.

SPHINGIDAE.

3. ***Macroglossum stellatarum*** L.
Loc. A, one ♂.

ZYGAENIDAE.

4. *Zygaena lonicerae* Schev.
Loc. A, one ♂, one ♀. The only species and only specimens of Zygaenids met with.

NOCTUIDAE.

By A. E. PROUT.

Bryophila perla Fb.
Loc. C, one ♂.

GEOMETRIDAE.

By L. B.. PROUT.

1. *Odezia atrata* L. *pyrenaica* Gmpbg.
Loc. C, one ♂.

2. *Scopula immorata* L.
Loc. A, one ♂.
A rather dark ab.

3. *Ortholitha chenopodiata* L.
Locs. A, eight ♀ ♀; C, three ♀ ♀; E, one ♀.

4. *Ortholitha bipunctaria* Schiff.
Loc. A, one ♀.

5. *Entephria cyanata* Hb.
Loc. A, one ♀.

6. *Lygris pyraliata* Schiff.
Loc. A, one ♂, one ♀.

7. *Lygris populata* L.
Loc. A, one ♀.
The brown form.

8. *Dysstroma citrata* L.
Loc. A, one ♀.

9. *Thera cognata geneata* Feisth.
Loc. A, one ♂.

10. *Hydriomena furcata* Thnb.
Loc. A, one ♀.

11. *Anaitis praeformata* Hb.
Loc. A, two ♂ ♂, one ♀.

12. *Selidosema taeniolaria* HB
Loc. D, one ♂.

13. *Chiasmia clathrata* L.
Loc. A, one ♂.

14. *Crocota peleticraria* Dup.
Loc. E, one ♀.

15. *Aspitates gilvaria* Schiff.
Locs. A, two ♂ ♂; B, one ♀.

(*To be continued.*)

LEPIDOPTERA COLLECTED DURING A ZOOLOGICAL MISSION TO THE GREAT ATLAS OF MOROCCO, 1927.

By F. Le Cerf and G. Talbot.

(*Continued from the* Bulletin of the Hill Museum, *Vol.* II, *No.* 1, *p.* 94.)

LIST OF LEPIDOPTERA.

The Noctuidae and Geometridae are dealt with by Miss A. E. Prout and by L. B. Prout respectively.

RHOPALOCERA.

PAPILIONIDAE.

*1. *Papilio podalirius lotteri* Aust.
Locs. I, one ♂ ; R, one ♀.

PIERIDAE.

2. *Pieris brassicae* f. aest. *lepidii* Röb.
Locs. H., four ♂ ♂, four ♀ ♀ ; K, one ♀ ; N, one ♀.

3. *Pieris napi segonzaci* Le Cerf.
Bull. Soc. Ent. France, p. 197 (1923), (Great Atlas: Haute Ourika).

A very distinct mountain race. There is some variation on the underside of the hind wing, in which the ground-colour is nearly white and the green vein stripes enlarged so that in extreme specimens the ground-colour is dark-green.

The series includes a few specimens of the form *deflava* Le Cerf (l.c).

Locs. U, seven ♂ ♂ ; T, seventeen ♂ ♂ ; W, fourteen ♂ ♂, three ♀ ♀ ; Q, one ♂ ; N, twenty-four ♂ ♂, six ♀ ♀ ; S, two ♂ ♂.

Only found at high altitudes. Our specimens were taken between 2,400 and 3,200 metres.

4. *Pieris rapae mauretanica* Vty.

The series is variable and no distinct winter or summer form occurs in any one place.

A large series from Locs. K, I, R, P, X, U, S, T, Q, W, L, C, A, D, AA.

5. *Pontia* (*Leucochloe* Röb.) *daplidice albidice* Ob.

Locs. A, D, C, P, K, T, L. A series of 8 ♂ ♂, 4 ♀ ♀.

6. *Euchloe belemia* f. *glauce* Hbn.

Locs. A, two ♂ ♂ ; AA, eight ♂ ♂.

*7. *Euchloe belia algirica* Ob. gen. aest. *pseudonymus* Roths., 1913.

Locs. L, one ♂, one ♀; P, five ♂ ♂; K, one ♂; H, two ♂ ♂. A ♂ from the latter locality has much reduced apical white spots on fore wing, and smaller white markings on hind wing below.

8. *Anthocharis charlonia* Donz.

Taroudant (Sous), January-April, 1927, two ♂ ♂ taken by Mons. Triaud.

A specimen was seen early in May on the route from Aguerd-el-Had to Sinis.

*9. *Anthocharis eupheno androgyna* Leech.

Locs. R, one ♂; K, one ♂; H, one ♀.

10. *Teracolus evagore nouna* Lucas.

Loc. K., six ♂ ♂, five ♀ ♀.

*11. *Gonepteryx cleopatra* L.

Locs. L, five ♂ ♂; D, two ♂ ♂; C, four ♂ ♂, one ♀; H, one ♂; X, one ♂.

12. *Colias electo croceus* Geoff.

Locs. K, nineteen ♂ ♂, seven ♀ ♀; R, one ♂, one ♀; H, one ♂; T, three ♀ ♀; U, one ♂; Q, one ♂, one ♀; N, two ♂ ♂, one ♀; S, two ♀ ♀; L, two ♂ ♂; W, two ♂ ♂, four ♀ ♀; P, one ♂, one ♀; A, six ♂ ♂, five ♀ ♀; C, two ♂ ♂; AA, one ♂, one ♀.

♀ f. *helice* Hbn.

Locs. A, one; P, one; K, one; R, one.

* ♀ f. *helicina* Ob.

Not typical. The yellow flush is paler and the hind wing is as in *helicina*, though with a yellow tinge.

Locs. C, one; N, one.

NYMPHALIDAE.

13. *Pyrameis cardui* L.

Locs. U, one ♀; T, one ♀; W, two ♀ ♀; K, one ♀.

14. *Polygonia c-album imperfecta* Blach.
Ann. Soc. Ent. France, lxxvii, p. 214 (1908) (Tangier).
Loc. W, one ♀.

15. *Melitaea cinxia atlantis* Le Cerf.
Bull. Soc. Ent. France, 1923 (Grand Atlas, Djebel Tachdirt).
Locs., T, four ♂ ♂, two ♀ ♀; W, twelve ♂ ♂, six ♀ ♀; N, two ♂ ♂, one ♀.
Only found between 2,000-2,600 m.

*16. *Melitaea phoebe punica* Ob.
Locs. R, one ♂, one ♀; L, one ♂; Q, one ♂.

17. *Melitaea didyma deserticola* Ob.
Locs. R, one ♂; K, two ♂ ♂; I, one ♂, one ♀; Q, one ♂; W, two ♂ ♂.
Compared with specimens in the Oberthür collection.

18. *Argynnis lathonia* L.
Locs. N, one ♀; P, one ♀.

SATYRIDAE.

19. *Melanargia galathea meade-waldoi* Roths. 1917.
Loc. P, one ♂.

20. *Melanargia ines colossea* Roths., 1917.
Loc. AA, two ♂ ♂, one ♀. Not found in the mountains.

21. *Melanargia ines jahandiezi* Ob. 1921.
Loc. H, three ♂ ♂.

22. *Satyrus abdelkader lambessanus* Stgr.
Loc. Q, three ♂ ♂.

23. *Pararge aegeria meona* Crm.
Locs. C, three ♂ ♂, two ♀ ♀; D, six ♂ ♂, two ♀ ♀; K, two ♂ ♂, one, ♀; E, one ♂; P, two ♀ ♀; W, one ♀.

24. *Pararge megera* L.
Locs. N, two ♂ ♂; S, two ♀ ♀; Q, one ♂; P, three ♀ ♀; W, one ♂, seven ♀ ♀; X, two ♀ ♀; C, one ♂; K, three ♂ ♂; T, two ♀ ♀.

25. *Epinephele ida* Esp.
Loc. X, one ♂, three ♀ ♀. Not found in the mountains.

26. *Epinephele jurtina hispulla* Hübn.

Loc. X, two ♂ ♂. Not found in the mountains.

27. *Coenonympha pamphilus lyllus* Esp.

Loc. X, one ♂, one ♀. Not found in the mountains.

28. *Coenonympha vaucheri* Blach.

Locs. U, two ♂ ♂ two ♀ ♀; W, six ♂ ♂, four ♀ ♀; P, fourteen ♂ ♂; N, three ♂ ♂, one ♀; Q, one ♂; S, one ♂.

LYCAENIDAE.

29. *Thecla ilicis mauretanica* Stgr.

These specimens show a very thin white line on the hind wing below, said to be absent in the typical form.

Loc. X, three ♂ ♂, three ♀ ♀. Not found in the mountains.

30. *Thestor ballus* Fbr.

Loc. AA, two ♀ ♀. Not found in the mountains.

*31. *Heodes phlaeas* L.

Locs. U, two ♂ ♂, one ♀; H, two ♂ ♂, one ♀; N, three ♂ ♂, two ♀ ♀; G, one ♂, one ♀; K, two ♂ ♂, five ♀ ♀; W, four ♂ ♂, four ♀ ♀; S, one ♂; D, three ♂ ♂, two ♀ ♀; I, two ♂ ♂, one ♀, P, seven ♂ ♂, six ♀ ♀; A, nine ♂ ♂, two ♀ ♀; X, two ♂ ♂, one ♀; C, one ♂; Q, two ♀ ♀; R, one ♂, ten ♀ ♀; AA, one ♂, one ♀.

Five ♂ ♂ and two ♀ ♀ belong to the f *caeruleo-punctata* Stgr.

Thirteen ♂ ♂, nine ♀ ♀ have a dusky suffusion over the fore wing.

32. *Heodes alciphron heracleana* Blach.

Ann. Soc. Ent. France, lxxvii, p. 217 (1908) (Gt. Atlas).

Locs. R, one ♀; P, one ♀.

33. *Lampides boeticus* L.

Locs. A, eight ♂ ♂, five ♀ ♀; D, one ♂; H, two ♀ ♀.

*34. *Syntarucus telicanus* Lang.

Locs. X, two ♂ ♂, two ♀ ♀; C, one ♂; D, one ♂, one ♀; H, one ♀.

*35. *Tarucus theophrastus* Fbr.

Locs. K, twenty-three ♂ ♂, four ♀ ♀; F, four ♂ ♂, one ♀; C, five ♂ ♂, two ♀ ♀; D, one ♂; A, three ♂ ♂, four ♀ ♀; N, one ♂.

36. *Azanus jesous* Guér.

Locs. A, one ♂, one ♀; D, one ♀.

37. *Zizeeria lysimon* Hbn.

The commonest Lycaenid, and met with everywhere. A long series from locs. A, D, C, K, R, G, F.

38. *Lycaena baton abencerragus* Pierr.

Locs. C, one ♂; K, four ♂ ♂, nine ♀ ♀; R, five ♂ ♂, nine ♀ ♀; H, two ♂ ♂, seven ♀ ♀; G, one ♂, three ♀ ♀; I, five ♂ ♂, eight ♀ ♀.

39. *Lycaena astrache calida* Bell.

Locs. C, two ♂ ♂; X, six ♂ ♂; N, one ♂, one ♀; P, two ♂ ♂, one ♀.

f. *ornata* Stgr.

Locs. N, one ♂; AA, one ♂.

40. *Lycaena icarus celina* Aust.

Locs. K, eight ♂ ♂, one ♀; T, one ♂; I, three ♂ ♂; R, three ♂ ♂; N, one ♀; P, one ♀; D, two ♂ ♂, one ♀; C, nine ♂ ♂, three ♀ ♀; X, seven ♂ ♂.

*41. *Lycaena bellargus punctifera* Ob.

Locs. N, one ♂; P, one ♂.

42. *Lycaena iolas powelli* Ob.

Loc. H, one ♂.

*43. *Lycaena melanops alluaudi* Ob. 1922.

Locs. K, twenty-nine ♂ ♂, four ♀ ♀; I, one ♂; T, twenty-two ♂ ♂, two ♀ ♀; H three ♂ ♂, two ♀ ♀; P, two ♂ ♂; U, two ♂ ♂, one ♀ W, three ♂ ♂, two ♀ ♀; N, one ♂, one ♀; S, one ♂, one ♀; R, seven ♂ ♂, one ♀.

44. *Cyaniris argiolus algirica* Ob.

Loc. D, three ♂ ♂. Seen flying round blackberry.

HESPERIIDAE.

45. *Carcharodus alceae* Esp.

Locs. D, two ♂ ♂; K, two ♂ ♂; A, three ♂ ♂; L, one ♂.

46. *Carcharodus stauderi* Rev.

Locs. R, one ♂; H, one ♀.

47. *Hesperia (Powellia) sertonius ali* Ob.

Locs. I, one ♂; R, one ♂; P, one ♂.

*48. *Hesperia onopordi* Ramb. and f. *nigrosatura* Vty.

H. onopordi 2nd gen. and secondary race *nigrosatura* Verity.

Ent. Record, xxxvii, p. 74 (1925) (Fez).

Locs. K, three ♂♂, one ♀; R, four ♂♂, one ♀; I, two, ♂♂ one ♀.

We fail to understand what Verity means by a "secondary race." Typical *onopordi* and specimens with hind wing dusted with black below (*nigrosatura*) occurred together.

49. *Adopaea hamza* Ob.

Loc. X, one ♂. Not found in the mountains.

50. *Adopaea actaeon* Rott.

Loc. X, one ♂, one ♀. Not found in the mountains.

HETEROCERA.

SYNTOMIDAE.

1. *Dysauxes punctata separata* Bang—H.

Loc. J., one ♂. Not typical as the yellow on the hind wing is extended to the middle and with three small spots beyond the cell. The fore wing is without markings. As it seems possible that the species is subject to individual variation we do not give a name to this variant.

LITHOSIINAE.

2. *Nola cucullatella* L.

Loc. J, three ♀♀.

ARCTIIDAE.

3. *Ocnogyna joiceyi* Talb.

Bull. Hill Mus., vol. ii, p. 32 (1928).

Loc. P, one ♂.

4. *Utetheisa pulchella* L.

Locs. A, one ♂; J, one ♂. The Tinmel specimen is small with much reduced red markings on the fore wing.

LIPARIDAE.

5. *Albarracina alluaudi* Ob.

"Et. Ent.," xix, p. 220, pl. dxlv, fig. 4590 (Marrakech) (1922) ♀.

Loc. J, one ♀.

The postdiscal black spots on fore wing larger, and costa paler, than in Oberthür's figure.

6. *Porthetria atlantica* Ramb.

Taken at light: Locs. C, one ♂; J, three ♂ ♂.

7. *Porthetria dispar* L.

Loc. X, one ♂ one ♀.

NOTODONTIDAE.

8. *Dicranura vinula delavoiei* Gaschet.

Loc. J, one ♂ at light.

9. *Macroglossum stellatarum* L.

Loc. H, two ♂ ♂.

Appears to be recorded only from Mazaghan on the Atlantic coast.

PSYCHIDAE.

10. *Cochliotheca crenulella* Bruand.

Locs. C, six ♂ ♂ at light; J, 5 ♂ ♂.

ZYGAENIDAE.

11. *Zygaena carniolica maroccana* Roths.

Nov. Zool., xxiv, p. 342 (1917) (Mogador) ♀.

Locs. C, two ♀ ♀; H, one ♀.

NOCTUIDAE.

By Miss A. E. PROUT.

Species marked * do not appear to have been previously recorded from the Atlas Mountains.

AGROTINAE.

1. *Heliothis peltigera* Schiff.

Loc. E, one ♀.

This common insect which is widely distributed in Algeria and Morocco, has been recorded by Oberthür and Rothschild from Middle Atlas.

2. *Euxoa segetis* Schiff.

Locs. J, one ♀; V, one ♀.

Common in Algeria and Morocco; in the Hartert and Powell collections from Middle Atlas.

3. *Euxoa mauretanica* Bang-Haas.

Agrotis mauretanica Bang-Haas, *Iris*, xxiv, p. 36, Taf. iii, fig. 4 (1910) (Süd-Oran).

Loc. J; a single rather worn ♂.

The above ♂ seems to agree with *mauretanica*, which is recorded by Oberthür from the Middle Atlas.

*4. *Agrotis flammatra* Schiff.

Locs. M; one ♂, one ♀; O, one ♀.

Not an abundant Algerian insect. Lord Rothschild records "small collections" from Aïn Sefra; Sebdou; Mechoria: Djebel Aïssa; Guelt-es-Steel.

A fine form, with the fore wing rather noticeably broad.

HADENINAE.

*5. *Miselia dysodea* Schiff., *faroulti* Roths. (?).

Polia faroulti Roths., *Nov. Zool.*, xxi, p. 322 (1914) (Algeria).

Loc. C, one very worn ♂.

The extremely poor condition of this specimen makes a certain determination impossible; but it is almost certainly a *Miselia* of the *dysodea* group and may well be *dysodea faroulti*, which is recorded from various localities in Algeria and Morocco. Just possibly *M. corsica* Rmbr. which is recorded from Middle Atlas, but does not seem to agree.

6. *Miselia atlas*, A. E. Prout.

BULL. HILL MUS., vol. ii, p. 33 (1928).

Loc. C, one ♀.

CUCULLINAE.

*7. *Metopoceras du seutrei* Oberth.

Phorocera du seutrei Oberth. *Et. Lép.* Comp. xix, p. 245, pl. DXXXV, figs. 4476-4479 (1922) (Mrassine; Fez.).

Loc. J; three ♂ ♂.

This interesting little insect seems only to have been recorded by Oberthür, from the two localities cited above. Two of the Great Atlas specimens are a little worn, but all three seem very near in the colour of fore wing to typical *felicina,* from which they differ in the slightly more elongate fore wing and more flattened hind wing, as well as in the more banded hind wing and more slender build of body mentioned by Oberthür.

ACRONYCTINAE.

*8. *Laphygma exigua* Hbn.

Loc. X, one ♂.

Widely distributed in Algeria and Morocco.

9. *Athetis clavipalpis* Scop.

Loc. V, one ♀..

Also common in Algeria and Morocco; included in the Hartert and Powell collections from Middle Atlas.

ERASTRIANAE.

*10. *Eublemma velox* Hbn. *griseimargo* Warr. (?).

Leptosia griseimargo Warr., *Nov. Zool.*, xix, p. 36 (1912) (Algeria.)

Loc. J, one ♂, one ♀.

As neither specimen is quite fresh it is difficult to determine the racial status of this form with certainty, but in all probability Great Atlas specimens agree with Warren's *griseimargo,* described from a single ♀ from "Algeria," in which country it is stated by Lord Rothschild to be common.

11. *Eublemma ostrina* Hbn.

Loc. N, one ♂.

Common and widely distributed in Algeria and Morocco; was taken in Middle Atlas by Hartert and Powell.

*12. *Eublemma cochlioides* Guen.

Loc. G, 2 ♂♂, 3 ♀♀.

This widely distributed insect appears to be quite local in Algeria. Lord Rothschild records it from Sidi-bel-Abbés. The ♂♂ tend towards the form *calida* Rbl.

*13. *Eublemma scitula* Rmbr.

Loc. J, one ♂, one ♀

Recorded by Lord Rothschild from Sidi-bel-Abbés; Ras Chergui, Aïn Sefra; Foret de Tenira and Sidi Ferruch.

14. *Eublemma symphona* A. E. Prout.
BULL. HILL MUS., vol. ii, p. 34 (1928).
Loc. H, one ♂.

*15. *Phyllophila numerica deserti* Oberth.
Et. Lép. xvi, pp. 187, 188, pl. XDVII, fig. 4131 (1918) (El-Outaya).
Loc. J, two ♂ ♂.

These specimens have perhaps required closer study than any of the other Great Atlas Noctuidae, there having been considerable confusion over the races of *numerica*—due in a large degree to insufficient material and to Guenée having united a Corsican ♂ and an Andalusian ♀ without observing the racial differences. Dr. Jordan and Messrs. Tams, Talbot and Prout, together with myself, have gone very carefully into the synonomy and the conclusion has been arrived at that there are five distinct races of *numerica*.

(1) *Numerica numerica* Boisd., from Corsica, with strongly dentate antemedial line and with reniform and orbicular closely approximated. This is the ♂ (nec ♀) of Guenée and is figured by Culot (pl. lxix, fig. 7).

(2) *Numerica sardoa* Roths. (*Nov. Zool.* xxvii), from Sardinia; closely related to No. 1, but larger and darker.

(3) *Numerica disjecta* Warr (in Seitz) = *numerica* ♀ of Guen. (pl. x, fig. 9), from Spain. This is the Ab. 1 of Hampson in *Cat. Lep. Phal.* X, with antemedial line nearly as in No. 1; stigmata smaller, the orbicular touching antemedial line, the reniform not proximally produced behind.

(4) *Numerica deserti* Oberth. = *disjecta* Roths. (nec Warr.), from Algeria and Morocco. Resembles No. 3 but has the lines more thickened, the antemedial less dentate than in either of the preceding forms. The type of *deserti* is a small, rather pale desert-form, but there does not at present seem sufficient ground for separating this from other Algerian and Moroccan forms.

(5) *Numerica ornatula* Christ., from Turkestan. Two of Christoph's specimens are now in the Joicey Collection. These are smaller and more weakly coloured than Nos. 1 to 4, with a paler hind wing; antemedial line highly dentate; stigmata placed somewhat as in Nos. 3 and 4, but the orbicular horizontally elongate; reniform shaped more as in No. 1.

There may possibly be three distinct species here :—

(1) *Numerica*, with subsp. *sardoa*.
(2) *Disjecta*, with subsp. *deserti*.
(3) *Ornatula*.

But as the genitalia of *numerica* and *deserti* (which we have examined) show only slight differences it has seemed wisest for the present to regard all as *numerica* races.

*16. *Eulocastra diaphora* Stgr.

Loc. J, two ♂ ♂, 3 ♀ ♀.

This species appears to be very local in Algeria; Lord Rothschild lists only seven specimens (from three or four different localities). In the Brit. Mus. Coll. there are four ♂ ♂ from Hammon-es-Salahin.

17. *Tarache lucida* Hufn.

Locs. B, one ♂ ; J. one ♀.

This very common and widely distributed species occurs in the Hartert and Powell collection from Middle Atlas.

CATOCALINAE.

*18. *Parallelia algira* Linn.

Loc. J, one ♂.

This widely distributed species shows an undoubted *tendency* to racial variation, especially in the breadth of and amount of shading on the pale band of the fore wing; there is also variation in the postmedial line and in the pale line on hind wing. But the amount of material before me is quite insufficient to allow of any thorough working out of races—especially in view of the fact that the species seems to be everywhere subject to aberrational differences. The ♂ from Tinmel has the pale band on fore wing of medium breadth, somewhat heavily irrorated with fuscous; the pale line on hind wing is narrow and inconspicuous.

OPHIDERINAE.

*19. *Raphia aethiops* Bang-Haas.

Iris, xxvi, p. 152, Taf. 6, fig. 16 (1912) (Algeria).

Loc. J, three ♂ ♂.

Aethiops (described from a single ♂ and ♀) is said to have the fore wing "coal-black" with the "medial area irrorated with white"; in the three ♂ ♂ from the Great Atlas the whole wing is more or less irrorated with white, the medial area being if anything darker than proximal and distal areas; in the figure of *aethiops* the pale postmedial and subterminal lines are both very fine and are divided by a *broad* dark band, whilst in Great Atlas specimens the pale lines are broader and the dividing band is distinctly narrower. There are also other small differences, but it is impossible to decide from such limited material whether the differences are racial or merely aberrational.

*20. *Autophila dilucida* Hbn. *libanotica* Stgr.

Locs. H, one ♂ ; J, one ♀.

Dilucida is a common species in Algeria. The above ♂ and a single ♂ in the Joicey Collection from Biskra are distinctly roseate in tone, and might well be Staudinger's var. *rosea*, which Lord Rothschild considers to be a race of *cerealis* Stgr.; but, as the ♀ is certainly a *dilucida* form and, although the two specimens were not taken together it is probable that they are ♂ and ♀ of the same species; it had seemed best to list both under *dilucida*. According to Lord Rothschild, Algerian specimens agree with the subspecies *dilucida libanotica* Stgr. rather than with *dilucida dilucida*; as the form *libanotica* is not before me for comparison, I can form no independent judgment on the point.

*21. *Antarchaea erubescens* Bang-Haas.

Prothymia erubescens Bang-Haas, *Iris*, xxiv, p. 40, pl. III, f. 11, (1910) (S. Oran).

Loc, J, twelve ♂ ♂, two ♀ ♀.

This is one of the most interesting Noctuidae brought from the Great Atlas, having apparently been only known previously from the ♂ holotype from South Oran and from a single ♀ in the Tring Collection, from Djebel Mekter, near Aïn Sefra. Several of the specimens from Tinmel are very worn, but a sufficient number are in good condition to show that the species is very variable in colour, ranging from bright buff-brown to rufous with hardly a shade of buff; in one rufous ♂ the markings are obsolescent (more as in the ♀ in the Tring Museum); in one or two specimens they are quite strong (more as in the type); other forms are intermediate. As all this variation occurs in the ♂, it is evidently aberrational, not sexual.

HYPENINAE.

22. *Hypenodes* sp.?

Apparently near to *costaestrigalis* Steph., but the condition is too poor to identify the species with certainty.

GEOMETRIDAE.

By LOUIS B. PROUT.

The *Geometridae* collected consist of about 37 species: 2 *Hemitheinae*, about 17 *Sterrhinae*, 9 *Larentiinae* (almost all *Eupitheciid*) and 9 *Geometrinae*. A few, on account of their worn condition or some other difficulty, are yet determinable, but the following annotated list gives a fairly adequate account of the collection. The Geometrids recorded from Morocco by Trovey Blackmore, Meade Waldo and Blachier in the article quoted by Oberthür (*Et. Lép. Comp.* xix (1) p. 11), were mostly from the Tangier district, a few from Rabat, and one only—*Pingasa lahayei* Oberth., vide Blachier, *Ann. Soc. Ent. Fr.* lxxvii, p. 222—from "South Morocco." Oberthür's own memoir, based chiefly on collections made by H. Powell at Zehroun and in the Middle Atlas is also somewhat fragmentary, but makes several very interesting additions to the fauna. Beyond these, we have only the notes on Hartert and Young's collecting in the Middle Atlas (*Bull. Soc. Sci. Nat. Maroc* v, pp. 145-150), and a few scattered descriptions of new species or races. The Tring Museum contains further material from Rabat Mazagan and a few other localities, but the country in general and the Atlas ranges in particular offer a very wide field for important new discoveries in the family. From the Great Atlas I do not know any previous Geometrid record.

Two species and one race are here described as new and it seems highly probable that the *Eupithecia* forms numbered 24 and 25 will also prove to be so, although the material is insufficient on which to base a judgment.

The asterisk preceding a name in the following catalogue indicates that the species has not previously been recorded from Morocco. Further information regarding the geographical range is added after the Le Cerf-Talbot records.

*1. *Chlorissa faustinata* (Mill.).

Loc. J, one ♀, May 20.

Distributed in the Mediterranean countries. Probably also *discessa* (Walk.) from India and *albistrigulata* (Warr.) are only races or slight modifications of it.

*2. *Microloxia menadiara* (Th.-Mieg.).

Loc. J, two ♂ ♂, one ♀, May 20.

Described from Algeria and apparently almost confined to that country.

*3. *Scopula turbidaria* (H.-Sch.).

Locs. E, one ♀; I, one ♂.

The ♂ is dark and heavily marked, the ♀ nearer to the *turbulentaria* (Stgr.) form, of which Staudinger writes "v. (gen. aest. ? et ab.)."

Another widely distributed Mediterranean species and with an extended range eastward to Asia Minor, Transcaucasia and N. Persia.

4. *Scopula marginepunctata* (Goeze).

Locs. C, one ♀; G, one ♀; X, one ♂.

All (unless Loc. G, which is worn) are of the sandy-tinted form which I named *argillacea* (Seitz' "Macrolep." iv, p. 181) and which is almost racial in North Africa.

Generally common in Central and Southern Europe, North Africa and Western and Central Asia, often abundant. The variability is dependent chiefly upon the colouring of the rocks and soil on which it rests.

5. *Scopula submutata* (Tr.) *nivellearia* (Oberth.).

Loc. C, four ♂ ♂, one ♀.

On the whole more fleshy-tinged than the most flesh-coloured of Oberthür's figures (*Et. Lép.* xix, pl. DXXXVII, fig. 4493).

The collective species belongs chiefly to S. Europe and Asia Minor. Oberthür's race was from Mrassine.

*6. *Glossotrophia isabellaria* (Mill.).

Locs. C, two ♀ ♀; J., one ♂, four ♀ ♀.

Can this be the species recorded by Oberthür (*Et. Lép. Comp.* xix (1) p. 291) from Timhadit, one ♀, August 1920, as "*rufomixta* paler than the E. Pyrenees form"?

One ♀ is rather deeply suffused, nearly throughout with light ochraceous-salmon, or pinkish-cinnamon. Tring Museum has, from Hamman R'irha, May 24, 1913, an analogus but dark-suffused ♀. As both these examples are rather broad-winged, it is just possible that they represent a distinct species, but I do not think so; *isabellaria* is a very variable species.

Recent researches, especially those of Dr. Wehrli, have resulted in merging as forms of one species *isabellaria* Mill. from Barcelona, *romanaria* Mill. from Italy, and *dentatolineata* Rbr. and Stgr. from Andalusia, probably also *semitata* Prout from Syria and *philipparia* Prout from Philippeville, Algeria. It is also recorded from Sicily and Tunis.

*7. *Sterrha mediaria* (Hb.).

Loc. E, two ♀ ♀.

Local in S. Europe and N.W. Asia Minor and apparently commoner in Algeria.

*8. *Sterrha renataria* (Oberth.).

Loc. J, four ♀ ♀, May 19 to 21.

All rather small and dusky.

Hitherto only recorded from Algeria.

9. *Sterrha unicalcarata* (Prout).

Ptychopoda unicalcarata Prout, *Nov. Zool.*, xxix, p. 341 (1922) (Algeria and ? Morocco).

Loc. J, two ♀ ♀, May 17 and 19.

These seem clearly identical with the darker form from Seksawa and Lalla Aziza (Morocco) and *pro parte* from Aïn Sefra mentioned in my original note. In the later dated specimen, which is in beautiful condition, the antemedian and median lines of the fore wing are connected just behind M, as in one or two abs. from Aïn Sefra.

10. *Sterrha* sp.

Loc. E, one ♀.

Very worn. Rather larger and not quite so narrow as *attenuata* Rbr., otherwise shaped about as in that species. A Corsican ♀ in coll. Joicey, determined by Constant as *extarsaria* H. Sch. (but erroneously, as the hind wing is strongly emarginate between the radials) looks very similar, but is also in poor condition; it has been provisionally removed to *dimidiata* H. (? form. *roseata* Trti.), but does not look altogether congruous there.

*11. *Sterrha exilaria* (Guen).

Loc. A, one ♂.

Previously known from S. France, Spain, Algeria and Tunis.

12. *Sterrha oranaria* (B.-Haas).

Locs. C, one ♂ ; H, one ♂.

The latter example is large, otherwise similar to some E. Algerian in the Tring Museum. The Tenfecht one is a rather heavily banded ab.; Tring has a similarly banded but more fleshy coloured ♀ from Mogador. The species is apparently very variable.

*13. *Sterrha cervantaria* (Mill.).

Loc. J, one ♂, nine ♀ ♀.

Broadly comformable to Staudinger's supposed race *depressaria* (N. Africa, Andalusia and Murcia), which he distinguishes by its being greyish instead of yellowish ; but somewhat variable, nearly always with some tint of fleshy or yellowish, while ample material in the Tring Museum has shown the name to be practically untenable. The name-typical form was from Catalonia and is also known from Collioure, S. France.

*14. *Sterrha substraminata* (Prout) (?).

Loc. G, one ♂, two ♀ ♀.

All more or less worn ; the best (a ♀) is warmer in tone, more approaching *helianthemata* Mill., and nearly agrees with three St. Baume ♀ ♀ in the Tring Museum labelled by Siepi as "*euphorbiata* Balestre" ; that species, according to the description, should have the cell-spot of the fore wing weak and should have *terminal* (not fringe) dots and the facies of *laevigata*, so that the determination seems clearly erroneous.

S. substraminata was described from Spain and has since been recognized in Algeria.

15. *Sterrha herbariata* (Fb.) (?)

Loc. B, one ♀.

Really not determinable, perhaps an extremely worn specimen of this species, which Oberthür has recorded from Morocco (Timhadit) and which is certainly not rare in Oran. It is widely distributed in Central and Southern Europe, North Africa, Palestine, Syria and through Asia Minor to Transcaucasia.

*16. *Sterrha laevigata* (Scop.) (?)

Loc. E, one ♀.

Another worn specimen, apparently an example of the rare aberration in which the characteristic median shade is obsolete.

S. laevigata has a similar range to *herbariata*, but extending to N. Persia, and is abundant in some parts of Algeria.

17. *Sterrha ostrinaria* (Hb.).

Loc. J, one ♂, one ♀, the ♂ on May 22, at light in rain, the ♀ on May 18.

Distributed in the Mediterranean countries.

18. *Sterrha degeneraria* (Hbn.).

Locs. C, one ♂, one ♀; J, one ♂, May 22, at light in rain.

Common in Europe, especially the south, and in N. Africa, extending also to Asia Minor and some localities in Central Asia.

*19. *Sterrha completa* (Stgr.).

Loc. E, two ♀ ♀.

Described from Algeria and known also from Tunis, representing the *intermedia* Stgr. of Asia Minor and Syria.

*20. *Orthonama obstipata* (Fb.).

Loc. J, one ♂, May 18.

The most nearly cosmopolitan of the Geometridae, inhabiting Europe, Continental Asia, Ceylon, Madagascar, nearly the whole of Africa, parts of North America, eastern coastal districts of South America, etc., chiefly in warm places, in N. Europe and probably N. Asia only occurring as an immigrant.

*21. *Coenotephria kalischata* (Stgr.).

Locs. M, one ♂; Q, one ♂.

Local in Spain and Algeria.

*22. *Eupithecia distinctaria* H.-Sch.

Locs. H, two ♀ ♀ ; J, one ♀, May 19.

Local but widely distributed among *Thymus serpyllum* and *vulgaris*, Europe, N. Africa, Syria, Asia Minor and Transcaspia.

*23. *Eupithecia lecerfi*, Prout.

Bull. Hill Mus., vol. ii, p. 35 (1928).

Since the description of this species was drawn up, M. Léon Lhomme has kindly sent us a ♀ paratype of *deverrata* Chrét. for examination. It proves to have four fully-developed spurs on the hindtibia, and is altogether so similar to the supposed Batna race of *lecerfi*, that it is probable that all three may prove to be forms of a single species. In any case, *lecerfi* is smaller than *deverrata*, less sand-coloured, much more sharply marked both above and beneath.

Loc. J, twenty-eight ♂ ♂ ; sixteen ♀ ♀. Batna, Algeria (Nelva) two ♂ ♂, one ♀ in Mus. Tring, lighter sandy.

24. *Eupithecia* sp.

Loc. U, one ♀, not yet determined, rather smaller and much darker than the preceding, probably new.

25. *Eupithecia* sp.

Loc. V, one ♂.

Too worn to describe, apparently from the genitalia near *exiguata* Hb. but with more the coloration and weaker markings of *vulgata* Haw. or *absinthiata* Cl.

*26. *Eupithecia unitaria* H.-Sch.

Loc. J, one ♀, May 20.

This should, on geographical grounds, be *U. desertorum* Dietze, 1910 (=*roseocinnamomaria* Roths. 1914), the supposed North African race of the species, hitherto known from S. Oran to Tunis, but I cannot see much in the distinctions. Name-typical *unitaria* was from S. Spain.

*27. *Eupithecia massiliata* Mill.

Locs. J, two ♀ ♀, May 19 and 20; M, one ♂ (Worn), ? this species.

All—especially the ♂ —appear rather narrow-winged compared with typical *massiliata;* but the Algerian specimens in the Tring Museum show some variation in the exact breadth of the wing.

Described from South France, this species is also known from various localities on the Mediterranean and from Teneriffe.

28. *Gymnoscelis pumilata* (Hb.)

Locs. A, one ♂ ; C, four ♀ ♀ ; J, two ♀ ♀ , May 20 and 23 ; M, eight ♀ ♀ ; V, one ♀ .

Generally abundant in Europe, N. Africa, W. and Central Asia. The Moroccan specimens, like most of those taken in the Mediterranean countries, are predominantly of the form *tempestivata* Zell.

29. *Hemerophila japygiaria* (Costa).

Locs. C, one ♂ , two ♀ ♀ : E, three ♂ ♂ .

Confined to S Europe and N. Africa.

*30. *Mannia codetaria* (Oberth.)

Loc. C, one ♀ .

Chiefly Algerian, but has been recorded from one or two localities in Spain. The Tenfecht specimen is small and worn.

31. *Itame spodiaria* (Lef.)

Locs., C, one ♂ ; H, two ♂ ♂ , one ♀ ; M, four ♂ ♂ ; O, one ♂ .

Not variable. In Europe it seems confined to Italy, Sicily and Andalusia; in Algeria it is locally common. First recorded from Morocco (Tangier district) by Meade-Waldo in 1905.

32. *Itame vincularia* (Hb.) *mrassinaria* (Oberth.)

Tephrina vincularia mrassinaria Oberth., *Et. Lép.*, xx, p. 249 ; *mrassinaria,* pl. DLXI, f. 4828 (1923) (Mrassine, Morocco).

Loc. C, one ♂ , two ♀ ♀ ; E, one ♂ .

The geographical variation of this species is somewhat difficult to deal with satisfactorily. In Europe, where the range is similar to that of *spodiaria,* it is on the whole very constant, though weakly marked specimens are not unknown. In 1914 Rothschild (*Nov. Zool.* xxi, p. 352) described a new race from Guelt-es-Stel, Central Algeria, characterized as *Itame vincularia latefasciata*, "postmedian line strongly angulated at vein 6, the chestnut band outside this line much wider, antemedian band more distinct." In 1922 Oberthür (*Et. Lép.* xix, p. 302) recorded *vincularia* as abundant at Mrassine, Morocco, in March and April and there very variable, and he named an extreme dark-banded ♂ aberration of this race *mrassinaria*, using the trinomial nomenclature. A part of his series, unfortunately exclusively ♂, is now in the British Museum and suggests the desirability of a provisional separation from *latefasciata*, the markings on the whole darker, often not so broad, the antemedian in particular generally strong, straighter, the median costal spot often wanting. Both the Atlas ♂ ♂ are rather strong manifestations of *mrassinaria* as represented by the type figure, the ground-colour rather brown, the two bands very dark, though the postmedian is attenuated anteriorily and not extremely broad posteriorly, in the Sinis example considerably broader than in the other. The two ♀ ♀ are a striking form and leave it doubtful whether we are dealing with a new race or ab. loc.

I register them as :—

♀ f. *atlantis* (? subsp.) nov. Ground-colour throughout darker than in the other forms, fore wing with antemedian subobsolete, cell-spot almost or absolutely wanting, postmedian narrow, with the slender costal end dark, the rest more ferruginous.

Tenfecht, 3,000-4,000 feet, at light, two ♀ ♀ taken together with the above mentioned ♂.

*33. *Diastictis colpias* Prout.

BULL. HILL MUS., vol. ii, p. 36 (1928).

Loc. E, ♀ type, in coll. Joicey. Rahama Oued, thirty-one hours S.E. of Mazagan, end of April to May, 1903 (W. Riggenbach), allotype in coll. Tring Mus., browner than the other specimens.

*34. *Tephrina deerraria* Walk.

Loc. E, one ♀.

The specimen is in rather poor condition, but seems to agree entirely with some Perrégaux (Oran) ♀ ♀ in the Tring Museum, which possesses also three ♀ ♀ of the species from Mogador.

Distributed nearly throughout Africa, apparently commonest in the south. Possibly a migrant.

*35. *Syrrhodia biskraria* (Oberth).

Loc. K, one ♂.

The specimen is decidedly suffused with olive-greenish. The green aberration was first named *viridaria* Roths. *Nov. Zool.* xxi, p. 353, founded on a weakly marked ♀, and subsequently *olivescens* Culot, Noct. et Geom. Eur. iv, p. 149, pl. 68, f. 1358, on a ♀ with the lines better developed. Most of the species of *Syrrhodia* (= *Hyperythra* = *Petrodava*, etc.), to which genus this certainly belongs, show a wide range of adaptive colour-variation—greens, yellow, browns or flesh-colour.

S. biskraria has only hitherto been known from Algeria; the substitution of this name for the closely allied *illiturata* Warr. of E. and S.E. Africa (see Janse, Check-List, " S. Afr. Lep. Het." p. 115) seems at least premature, as the last-named has, *inter alia*, a slightly more sinuous termen to the hind wing.

*36. *Pythanosis henricaria* (Oberth.).

Locs. E, three ♂♂; J, one ♂.

Variable as usual. This very distinct species was described as a *Stegania* treated provisionally by Staudinger and in Seitz as a *Hypoxyctis*, and latterly shown by Turati (*Atti Soc. Ital. Sci. Nat.*, lxi, p. 160, 1922) to require a separate genus.

The larger, first-brood specimens, to which, naturally, the present examples belong, were first named *macronata* Stgr.; subsequently Lord Rothschild (*Nov. Zool.* xxi, p. 349), named the Spring form from Guelt-es-Stel, " gen. aest. *robustaria*."

Previously known range: Algeria to Cyrenaica.

*37. *Lomographa trimaculata* (Vill.).

Loc. J, one ♂, one ♀.

Both are rather large, pale yellowish, with the costal spots weak, the ♀ with indications of the submarginal markings of *ochrearia* Bang-Haas (1910). The latter was founded on a single specimen from Ain Draham, Tunis, but a good topotypical series in the Tring Museum show it to be fairly constant there; Oberthür, who renamed it from the same locality, "*permutaria* (i.e. *permutataria*, a synonym of *trimaculata*) var. *xanthinaria*" (*Et. Lép.* xx, p. 231, fig. 4839), was probably more correct as to its status.

L. trimaculata is local in Central and S. Europe, and not uncommon in N. Africa.

EASTERN SATURNIIDAE WITH DESCRIPTIONS OF NEW SPECIES.

(Plates II-VII.)

By Professor E. L. BOUVIER.

[Professor Bouvier kindly undertook to work out the forms of this family collected by Messrs. Pratt, and the results are given in the following paper.—Eds.].

Au cours d'une mission de recherches organisée sous les auspices de M. J. J. Joicey, deux habiles et courageux voyageurs, MM. F. et C. Pratt ont recueilli dans les montagnes de l'Insulinde une quantité considérable de Lépidoptères parmi lesquels se trouvaient des Saturnides dont M. Joicey a bien voulu me confier l'étude. C'est à l'énumération et à la description des formes contenues dans ce groupe d'Hétérocères qu'est consacré le présent travail. Provenant de pays lointains et difficiles où les explorateurs n'avaient guère pénétré jusqu'ici, la récolte fut riche, intéressante surtout à cause des nouveautés qu'elle renferme et qui sont en nombre très prédominant; elle a été faite en trois régions bien distinctes; en voici le détail pour chacune des stations :—

I. Sumatra (Sud-Ouest) :—

(1) Barisan Range, western slopes, 2,500 pieds, (octobre-novembre), 1921.
- *Antheraea Pratti* nov.
- *Attacus Atlas sumatranus* Frühst.

(2) Mount Korintji slopes 7,300 pieds (août-septembre, 1921).
- *Loepa katinka* Westw.
- *Cricula trifenestrata* Walk.
- *Antheraea prelarissa* nov.
- *Antheraea Roylii korintjiana* nov.

(3) North Korintji Valley, 5,000 pieds (septembre-octobre, 1921).
- *Loepa katinka* Westw.
- *Loepa katinka megacore* Jord.
- *Cricula trifenestrata* Walk.
- *Antheraea mylittoides* nov.
- *Antheraea prelarissa* nov.

Antheraea Roylii korintjiana nov.
Antheraea paphia subcaeca nov.
Sonthonnaxia maenas recta nov.
Attacus Atlas sumatranus Fruhst.

II. Buru et Ceram (Moluques) :—

(1) Kako Tagalago, Central Buru (mai).
Cricula trifenestrata Walk.
Antheraea paphia buruensis nov.
Attacus Crameri Feld.

(2) Gamoe Mrapat, Central W. Buru, 5,000 pieds (avril).
Syntherata janetta weymeri Maas.
Attacus Crameri Feld.

(3) Ceram Central, 3,000 pieds (janvier-février, 1920).
Opodiphthera ceramensis nov.
Attacus Crameri Feld.

(4) Manusela, Central Ceram, 6,000 pieds (octobre-décembre, 1919).
Cricula trifenestrata Walk.
Antheraea paphia L.
Philosamia cynthia ceramensis Bouv.
Attacus Crameri Feld.

III. Nouvelle Guinée hollandaise :—

(1) Wangaar, S. de Geelvink Bay (avril-mai, 1920).
Opodiphthera Joiceyi nov.

(2) Nomnagihe 25 milles au S. de Wangaar, 2,000 pieds (janvier-février, 1921).
Syntherata apicalis nov.
Syntherata janetta White et sa forme *Weymeri* Maas.
Coscinocera Hercules eurystheus Roths.

(3) Menoo River, Monts Weyland, 4,000 pieds.
Coscinocera Anteus Bouvier.

(4) Monts Kunupi, Menoo Valley, Monts Weyland, 6,000 pieds (novembre-décembre, 1920).
Opodiphthera Talboti nov.
Opodiphthera intermedia nov.
Opodiphthera papuana Roths.
Opodiphthera albicera Roths.
Opodiphthera venusta Roths. et Jord.
Syntherata janetta White passant à *weymeri*.

Cette liste met en nouvelle lumière : (1) l'indépendance de la faune de la Nouvelle-Guinée ; (2) le caractère mixte de la faune des Moluques qui est indo-malaise par ses *Antheraea* et *Cricula*, néo-guinéenne et australienne par son *Opodiphthera* et le *Syntherata janetta* ; (3) les variations qu'ont subies les *Antheraea* indiens en suite de leur adaptation à la climatologie d'Extrême-Orient ; le *Pratti* nov. est une modification de l'*Helferi*, le *mylittoides* du *mylitta* Drury, le *korintjiana* nov. du *Roylii* Moore, le *paphia* L. se présente sous des formes diverses (*subcaeca* de Sumatra, *buruensis* de Buru) et le *prelarissa* appartient de toute évidence à la lignée du *Frithi* Moore.[1]

En dehors de ces observations d'ordre général, il convient de signaler quelques faits particuliers d'un intérêt special : l'existence dans les montagnes du sud-ouest de Sumatra d'une variété de *Sonthonnaxia maenas* remarquable par la coupe de ses ailes antérieures ; l'abondance insoupconnée des *Opodiphthera* dans la région néo-guinéenne et le grand polymorphisme sexuel particulier à ce genre ; enfin, la connaissance des femelles de l'*Attacus Crameri* qui compte, avec l'*Attacus Atlas*, parmi les plus grands papillons du globe.

Avant d'aborder l'étude des espèces mentionnées dans le présent travail, je suis heureux de témoigner ma gratitude à M. Joicey qui a libéralement offert au Muséum tous les doubles de cette précieuse collection.

(I) SOUS-FAMILLE DES SATURNIENS.

Genre *Opodiphthera* Wallengren.

O. **Joiceyi** sp. nov. (fig. 16 ♂, 18 ♀)

Deux ♂ ♂, trois ♀ ♀ de Wangaar, S. de Geelvink Bay ; un ♂ de Nomnagihe.

Très voisin d'une espèce de Yule Island dont je décrivis récemment le mâle sous le nom d'*O. Foucheri* Bouv. et la femelle sous celui d'*O. grisea* Bouv. ; s'en distingue au premier abord, quel que soit le sexe, par la forme des ocelles qui sont ovalaires mais étirés dans le sens de la longueur de l'aile, et par suite plus longs que larges dans *Foucheri*, comprimés dans le même sens du côté basal, et par suite plus larges que longs (rarement aussi larges que longs) dans *Joiceyi*.

Les mâles des deux espèces sont à peu près du même ton fauve, mais les nervures et les parties brunes des rayures tranchent moins sur le fond dans *Joiceyi*. La taille est plus grande (107 mm., au lieu de 90), les ailes antérieures sont moins falquées, leur côté externe étant à peine concave. Les anneaux et croissants des ocelles sont semblables ; toutefois, dans sa moitié proximale, l'anneau externe tourne au rouge dans *Joiceyi*, tandis qu'il reste d'un brun noir dans *Foucheri*. La rayure externe de la face dorsale des ailes antérieures est droite ou à peine convexe en dehors et, dans ce cas (mâle de Nomnagihe) formée d'une série de lunules internervulaires peu saillantes, alors qu'elle est continue dans *Foucheri* ; dans cette dernière espèce, elle s'évanouit avant d'atteindre le bord costal, ou plutôt s'évase en une tache blanche qui s'étend jusqu'à l'apex. tandis qu'elle atteint la côte et qu'on observe beaucoup moins de blanc entre sa terminaison et le bord apical dans *Joiceyi*. En dessous, les ailes de *Joiceyi* sont d'un brun rougeâtre clair assez uniforme où tranchent les rayures externes des deux ailes qui sont brunes en dedans, blanches en dehors ; dans *Foucheri*, par contre, les parties brunes de l'aile sont exclusivement en dehors des rayures externes qui sont indiquées par des avances en lobes blancs, le reste de la surface est beaucoup plus clair, surtout aux ailes postérieures et dans la partie abdominale des ailes antérieures qui passe au jaune. Le croissant blanc des ocelles devient ici un anneau qui est moins complet et moins bien indiqué dans *Joiceyi*,

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[1] C'est pour donner une idée plus nette des variations de cet important genre que j'ai inclus dans ce travail la description de quelques *Antheraea* nouveaux appartenant aux collections du Muséum National d'Histoire Naturelle de Paris.

Les femelles de *Joiceyi* sont également plus grandes que celles de *Foucheri* (130 mm. au lieu de 98) ; elles sont aussi beaucoup plus foncées, d'un brun noirâtre, et non pas grises ; les rayures sont peu différentes, toutefois, dans deux exemplaires de *Joiceyi* sur trois, elles sont un peu sinueuses. La partie centrale jaune des ocelles est presque aussi bien developpée que chez le mâle dans *Foucheri*, tandis qu'elle est à peine sensible dans *Joiceyi*. Mêmes différences de tons en dessous ; dans les deux espèces, d'ailleurs, on observe sur cette face, aux deux ailes, une rayure médiane et une externe, l'une et l'autre épaisses, lunulaires et plus noirâtres que le fond.

Dans *Foucheri*, les franges sont presque blanches dans le mâle, d'un gris très clair dans la femelle ; elles sont d'un gris foncé dans le mâle de *Joiceyi* et d'un gris noirâtre chez la femelle.

C'est l'ensemble de tous ces matériaux qui m'a permis de considérer l'*O. griseus* comme le mâle de *Foucheri*. D'ailleurs, en décrivant ces deux formes, j'en avais prévu la parenté : " Il est possible, disais-je, qu'elles représent les formes sexuelles d'une même espèce."

Je suis heureux de dédier cette espèce à M. Joicey.

O. **Talboti** sp. nov. (fig. 3).

Trois ♂ ♂ capturés au Mont Kunupi, Vallée Menoo, Monts Weyland, par 6,000 pieds.

Plus voisin encore de l'*O. Foucheri*, mais avec les ocelles comprimés, plus larges que longs, semblable à ceux de *Joiceyi*. Ressemble à *Foucheri* par sa taille, sa coloration générale, celle de ses nervures et de ses rayures; la coloration de l'anneau externe des ocelles est également à peu près la même dans toute son étendue; la falcature des ailes antérieures est aussi grande, et la tache blanche apicale presque aussi développée. Diffère de *Foucheri* par la rayure externe absolument droite et très voisine de l'ocelle des ailes antérieures, par l'apex beaucoup plus étroit de ces ailes, par la rayure externe des ailes postérieures qui est très irrégulière et, comme la rayure interne, tangente à l'ocelle. En dessous, les ailes sont partout d'un brun rougeâtre mitigé par des poils blancs qui abondent surtout à la place des rayures externes. Envergure : 79 à 82 mm.

Cette espèce est dédiée à M. Talbot, l'aimable collaborateur de M. Joicey.

O. **intermedia** sp. nov. (fig. 10).

Un ♂ provenant de la même chasse que les exemplaires de *Talboti*.

Tient de *Foucheri* par sa taille, l'atrophie costale de la rayure externe de ses ailes antérieures et la distance de cette rayure à l'ocelle; de *Talboti*, par la direction et l'obliquité de la même rayure, la coloration générale et celle de l'anneau ocellaire externe; de *Joiceyi* et de *Foucheri*, par la forme régulière et la position de la rayure externe des ailes postérieures qui est très largement séparée de l'ocelle. Celui-ci, à toutes les ailes, est remarquable par l'épaisseur et la vivacité de son croissant rouge qui sont bien plus grandes que dans les espèces précitées. En dessous, l'anneau blanc de l'ocelle est presque aussi net et complet que dans *Foucheri* et *Talboti*; la coloration brune du corps et des ailes est plus accentuée dans ces deux espèces. La rayure interne de la face dorsale des ailes postérieures est tangente à l'ocelle comme dans *Talboti* et certains exemplaires de *Joiceyi*. Envergure : 99 mm.

O. **ceramensis** sp. nov. (fig. 17).

Trois ♂♂, Ceram Central, 3,000 pieds.

Appartient au même type ocellaire que les trois espèces précédentes; toutefois, les ocelles sont peu comprimés dans le sens de la longueur, et, assez souvent, presque circulaires; leur coloration est à peu près la même, avec des tons moins vifs, surtout dans l'anneau interne jaune qui est assez terne.

C'est la moins falquée des espèces précédemment citées; le bord externe de ses ailes antérieures est presque droit, son apex étant à peine saillant. C'est aussi l'espèce où la coloration fauve tire le plus au rouge et s'étend plus uniforme; l'espace subovalaire compris entre l'ocelle des ailes antérieures et la partie intracellulaire concave de la rayure interne se distingue très peu par sa coloration, alors qu'il tranche plus ou moins vivement dans les autres espèces. Rayure externe des ailes antérieures épaisse, droite, très peu oblique, légèrement atténuée au bord costal; apex sans tache blanche; rayures des ailes postérieures comme dans *Foucheri*, mais encore plus éloignées de l'ocelle. La face inférieure est très particulière, rougeâtre avec un semis de poils blancs jusqu'aux rayures externes qui sont à peine sensibles ; contrairement à ce que l'on observe dans les espèces précitées, le jaune a totalement disparu autour de la fenêtre ocellaire, partout remplacé par du rouge qui devient plus sombre au contact de l'anneau blanc. Envergure : 102 mm.

O. venusta Roths. et Jord.

Quatre ♂ ♂ capturés en même temps que les *Talboti*.

Cette jolie espèce était jusqu'ici connue de la Nouvelle Guinée anglaise où elle fut capturée par Meek à 5,000 pieds. Elle est remarquable par sa coloration rouge, ses taches marginales blanches, surtout par ses ocelles dissemblables, ceux des ailes antérieures (face dorsale) ayant un anneau interne complètement rouge qui est remplacé distalement par un fort segment noir aux ailes postérieures.

O. papuana Roths.

Un ♂ provenant des mêmes chasses que les mâles de l'espèce précédente.

Il me paraît très normal, de coloration jaune soufre foncé, l'anneau central de l'ocelle aussi jaune en dessous qu'en dessus. Dans cet exemplaire, les points lunulaires noirs sont, en dessus, presque partout indistincts.

De la même localité et de la même chasse, une femelle jaune très foncée qui se distingue par ses ocelles dont le large anneau devient d'un brun presque noir comme l'anneau périphérique, et cela sur les deux faces des ailes. C'est sans doute une aberration (*nigroculata*) (fig. 13).

O. albicera Roths. et Jord.

Cinq ♂ ♂ provenant encore des mêmes chasses.

Ils sont normaux, d'un jaune très pâle avec l'anneau central des ocelles de couleur blanche sur la face inférieure des ailes; il est jaune dans *papuana*. Cette forme était connue en Guinée anglaise. Très voisine de *papuana*, Jordan la tient pour différente à cause de la structure des pièces génitales.

On a coutume de confondre et de réunir dans le genre *Opodiphthera* les Saturniens du type précédent qui appartiennent aux parages néoguinéens et ceux plus ou moins analogues qui sont localisés en Australie et en Tasmanie. Avec Packard et Cockerell (*Mem. Acad. Sciences*, Washington, XII, 172, 1914), je crois qu'il y a lieu de séparer ces derniers dans un groupement générique spécial et d'accepter, pour ce groupement, le terme d'*Austrocaligula* proposé par Packard. Mais Packard et Cockerell n'ont point caracterisé leur genre et se sont bornés à dire qu'il avait pour type le *Saturnia Helena* White.

Il convient donc de définir les deux genres *Opodiphthera* et *Austrocaligula*, d'en préciser la distribution et d'établir la liste des espèces qui leur appartiennent. Rothschild semble avoir pressenti les caractères distinctifs des deux types ; en étudiant l'*Opod. inversa* Roths. et en le comparant à l'*Opod. astrophela* Walker, le savant entomologiste observe (Nov. Zool. III, 21, 1896) que la première espèce diffère de la seconde par ses ocelles beaucoup plus petits et par sa rayure externe dont la frange claire se trouve en dedans, tandis qu'elle est située en dehors dans *astrophela*. Ce sont les traits distinctifs essentiels des deux genres ; dans les *Opodiphthera*, les ocelles sont toujours petits, leur plus grand diamètre égalent au plus les 9 centièmes de la plus grande largeur des ailes antérieures, et la frange claire de la rayure externe des ailes antérieures se trouve en dedans de la partie foncée ou fait totalement défaut ; à l'inverse, dans les *Austrocaligula*, les ocelles sont grands, leur diamètre atteignant au moins les 14 centièmes de la plus grande largeur de l'aile, et la partie foncée de la rayure externe des ailes antérieures se trouve toujours en dedans.

Les *Austrocaligula* sont exclusivement australiens ou tasmaniens ; on en connait, à l'heure actuelle, 8 espèces : *astrophela* Walker, *carnea* Sonthonnax, *eucalypti* Scott, *fervida* Jordan, *Helena* White (avec sa variété *intermedia* Lucas), *loranthi* Lucas, *purpurascens* Walker, et *simplex* Walker, très distinct d'*astrophela* il me semble, bien qu'on ait coutume d'identifier ces deux formes.

Quant aux *Opodiphthera*, ils sont propres à la Nouvelle-Guinée ; toutefois, il résulte de mes recherches qu'on les rencontre aussi dans les îles avoisinantes, à Yule Island qui est contigu à la côte néo-guinéenne (*O. Foucheri* Bouvier) et à Ceram où Pratt en a découvert une espèce (*O. ceramensis* Bouvier). Je crois utile de donner le tableau synoptique suivant des 11 espèces que l'on doit placer dans ce genre.[1]

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[1] Je ne connais *pristina*, *strigata* et *inversa* que par leurs descriptions.

I.—ANTENNES À BRANCHES NOIRES.

Ailes jaunes, les antérieures avec une tache apicale pourprâtre, ces ailes à bord externe droit avec deux rayures extradiscales dentées, une externe complète, une submarginale incomplète ; ocelle antérieur médiocre, le postérieur petit ... ... ♀ *pristina* Walk. (Nouvelle Guinée).

II.—ANTENNES À BRANCHES JAUNÂTRES.

A.—Rayure externe des ailes postérieures simple et nette.

B.—Cette rayure très onduleuse.

C.—Cette rayure noire et simple comme celle des ailes antérieures ; la fenêtre des ocelles entourée de jaune.

D.—Ailes jaunes, pas de tache cramoisie aux épaulettes.

E.—Ailes d'un jaune franc ; sur la face ventrale, la fenêtre des ocelles est entourée de jaune ... ... ♂ ♀ *papuana* Roths. (Nouv. Guinée anglaise et hollandaise).

E¹.—Ailes d'un jaune très pâle ; sur la face ventrale, la fenêtre des ocelles est entourée de blanc ... ... ♂ *albicera* Roths. et Jord. (Nouv. Guinée anglaise et hollandaise).

D¹.—Ailes chamois jaunâtre, tache cramoisie à la base des épaulettes ... ... ♂ *strigata* Bethune-Bak. (Nouv. Guinée anglaise).

B¹.—Cette rayure simplement peu régulière, la fenêtre des ocelles entourée de rouge, ailes rougeâtres ... ... ♂ *venusta* Roths. et Jord. (Nouv. Guinée anglaise et hollandaise).

A¹.—Rayure externe des ailes postérieures faite de plusieurs bandes parallèles, onduleuses ou lunulaires.

B.—Cette rayure faite de trois bandes lunulées, fenêtre des ocelles assez grande, ailes ocracé tan ... ... ♂ *inversa* Roths. (Nouv. Guinée anglaise).

B^1.—Cette rayure faite de deux bandes ondulées ; fenêtre des ocelles réduite ou virtuelle ; les mâles chamois plus ou moins brunâtres ; les femelles gris plus ou moins noirâtres, avec les rayures externes des postérieures vagues.

C.—Les deux rayures des ailes postérieures tangentes à l'ocelle ; ailes du mâle assez falquées ... ... ♂ *Talboti* Bouv. (Nouv. Guinée holland.)

C^1.—La rayure externe des ailes postérieures n'est jamais tangente à l'ocelle ; l'interne très rarement.

D.—Ocelles ovalaires étirés dans le sens de la longueur de l'aile ; rayure externe des ailes antérieures du mâle presque nulle près de la côte où elle est remplacée par une tache blanchâtre apicale ... ... ♂ ♀ *Foucheri* Bouv. (Yule Island).

D^1.—Ocelles comprimés dans le sens de la longueur de l'aile, plus larges que longs ou arrondis.

E.—Bords externes des ailes antérieures du mâle légèrement concave ; sur la face inférieure, la fenêtre ocellaire est entourée de jaune comme en dessus.

F.—Croissant rouge des ocelles de la face supérieure terne et étroit ; rayure externe des ailes antérieures atteignant la costa... ♂ ♀ *Joiceyi* Bouv. (Nouv. Guinée holland.)

F^1.—Croissant rouge des ocelles de la face supérieure épais et d'un ton vif ; rayure externe des ailes antérieures presque nulle près de la costa ... ♂ *intermedia* Bouv. (Nouv. Guinée holland.)

E^1.—Bord externe des ailes antérieures presque droit, la rayure externe de ces ailes très atténuée près du bord costal ; à la face inférieure le jaune est remplacé par du rouge autour de la fenêtre ocellaire ... ... ♂ *ceramensis* Bouv. (Ceram).

Genre *Syntherata* Maassen.

S. **apicalis** sp. nov. (fig. 12).

Deux ♂ ♂ de Nomnagiho, à 25 milles au sud de Wangaar, 2,000 pieds. Coloration assez uniforme, d'un gris brunâtre passant au roux en dehors de la rayure externe des ailes antérieures, plus claire et un peu jaunâtre aux ailes postérieures, les rayures d'un brun plus foncé un peu rougeâtre, l'externe des ailes antèrieures très large et plus foncée que les autres, les franges d'un brun roux; la face ventrale rouille vif avec nombreux poils gris jusqu'à la rayure submarginale qui est indiquée par une série de taches triangulaires noires, nettes surtout aux ailes postérieures, les autres rayures brunâtres mais peu distinctes à cause des poils gris qui les recouvrent. Les antennes jaune roux, avec 32 articles dont les 12 terminaux sont réduits à une paire de branches courtes, rudimentaires ou nulles ; les articles apicaux ne sont guère qu'au nombre de 7 ou 8 dans *S. Janetta*.

Rayures et ornements de cette dernière espèce, mais avec les différences suivantes :—

(1) La rayure externe des ailes antérieures, sinueuse comme dans *Janetta*, est de direction rectiligne, sans inflexion vers la base dans la région costale.

(2) La rayure submarginale des mêmes ailes est large, continue su- toute sa longueur, un peu infléchie vers l'apex qu'elle atteint à très peu près par son évasement costal, tandis qu'elle est droite, éloignée de l'apex, discontinue et formée d'une succession de lunules ou de taches dans les *Janetta* typiques.

(3) Les ailes, en dessus, sont dépourvues des raies marginales internervulaires que'on observe généralement dans *Janetta*.

(4) La rayure interne des ailes postérieures n'est pas mince, très en zigzag sur toute sa longueur et rentrée en dedans au niveau de l'ocelle, comme c'est le cas dans *Janetta* ; elle est presque aussi large et épaisse que la rayure externe des ailes antérieures, très peu sinueuse, tangente à l'ocelle et fait un petit angle rentrant un peu au devant de celui-ci. Une différence est plus frappante encore ; les ailes sont très falquées, avec l'apex fort saillant, un peu tronqué et le bord externe des ailes antérieures très concave. Envergure : 120 mm.

S. Janetta White.

Un ♂ de Nomnagihe, à 25 milles au S. de Wangaar, 2,000 pieds.

Exemplaires passant à la forme *Weymeri* Maassen : quatre ♂ ♂ de la même chasse et deux ♂ ♂ du Mount Kunupi, Menoo Valley, Mounts Weyland, 6,000 pieds.

Exemplaires de la forme *Weymeri* Maassen, plus ou moins accentuée ; trois ♂ ♂ et une femelle de Gamoe-Mrapat, Central West Buru, 5,000 pieds. Trois ♀ ♀ de Nomnagihe; l'un, où le jaune prédomine encorer sauf dans l'aire médiane des ailes antérieures qui est brune, les deux autres d'un gris-brun à peu près uniforme.

Cette espèce présente des variations de couleurs extraordinaires, si bien qu'on y a vu plusieurs espèces et variétés dont la séparation semble vraiment impossible.

Genre *Loepa* Moore.

L. katinka Westw.

Quatre ♂ ♂ de North Korintji Valley, au S.W. de Sumatra, 5,000 pieds.

Deux ♂ ♂ des pentes du Mt. Korintji, 7,300 pieds.

Un ♂ du Kako Tagalago, Central Buru, 2,700 pieds.

L. katinka var. *megacore* Jordan.

Quatre ♂ ♂ de North Korintji Valley.

Genre *Cricula* Walker.

Cricula trifenestrata Helfer.

Trois ♂ ♂ de North Korintji Valley : coloration assez uniforme, d'un brun rougeâtre ou jaunâtre, apex très saillant. Dans deux de ces mâles la fenêtre discale des ailes antérieures est assez grande et la fenêtre subcostale simple ou double, la fenêtre des ailes postérieures étant médiocre ; dans l'autre, toutes les fenêtres sont réduites au point d'être difficilement perceptibles.

Un ♂ des pentes du Mt. Korintji ; par la forme semblable aux précédents, mais la coloration est d'un roux jaunâtre, sauf dans la région externe qui tourne au brun ; fenêtres comme dans les exemplaires précédents, mais il y a une fenêtre accessoire entre les deux médianes antérieures, cette fenêtre punctiforme comme la subcostale et, comme celle-ci, largement entourée de brun-noir.

Cinq ♂ ♂ de Kako Tagalago, Central Buru ; trois, de la forme claire qui est rousse ; un, de la forme foncée qui est d'un gris brunâtre, celui-ci avec une fenêtre intermédiaire, les autres dépourvus de cette fenêtre, mais avec la subcostale en tache noire. Apex bien saillant.

Un mâle de Manusela, Central Ceram, 6,000 pieds : roux, apex très saillant, les fenêtres discales très petites, la subcostaleen tache noire.

On a décrit des variétés nombreuses de *trifenestrata* ; on pourrait en décrire bien plus encore. Il vaut mieux attendre une révision complète de l'espèce, tâche commencée d'ailleurs par Mr. Jordan.

Genre *Antheraea* Hübner.

A. paphia L.

Un ♂ et trois ♀ ♀ de Manusela, Central Ceram, 6,000 pieds.

Le mâle tout à fait semblable à la figure du type donnée par Aurivilius en 1881 (Kong. Sv. Vet. Akad. Handl., xix, No. 5, 147, fig. 2), sa coloration roux vif, un peu rose en dehors de la rayure externe ; les femelles, jaune paille avec les rayures brunes, l'externe marginée de blanc en dehors, puis de rose, très droite. Ocelles semblables dans les deux sexes, mais leur fenêtre est grande chez les femelles, médiocre chez le mâle ; d'ailleurs, quel que soit le sexe, plus développée aux antérieures qu'aux postérieures et entourée des mêmes anneaux ou croissants : d'abord un fin liséré jaune, puis un large anneau gris rosâtre qui, du côté basal, est plus ou moins envahi par le rouge rose dans lequel est inclus le croissant proximal blanc, puis encore un fin anneau jaune qui, proximalement, s'arrête à la zone rose rouge, enfin, un anneau noir, à peine plus large, qui tourne fréquemment au rose rouge. Les femelles sont d'un jaunâtre pâle qui tourne au gris noir par abondance des écailles foncées ; les rayures interne et médiane sont les plus distinctes ; les deux parties qui constituent la rayure externe le sont à peine chez le mâle. En dessous, les ocelles assez comme en-dessus, mais de tons plus vagues. Envergure : du mâle, 148 mm. ; de la femelle, 156 mm.

A. Paphia **buruensis** nov. var. (fig. 11).

Deux ♀ ♀ de Kako Tagalago, Central Buru.

Diffèrent des femelles précédentes par leur coloration d'un roux brunâtre, les ailes antérieures notablement falquées avec le bord externe concave sous l'apex obtus, enfin et surtout par la rayure des ailes antérieures qui, au lieu d'être droite, est franchement concave en dehors. Le dessous est brunâtre, avec de nombreux poils blancs. Envergure du type 139 mm., de l'autre femelle 158 mm.

A. Paphia **subcaeca** nov. var. (fig. 14).

Une ♀ de North Korintji Valley, 5,000 pieds.

Très voisine de la variété précédente et de même coloration ; s'en distingue :—

(1) Par le bord externe des ailes antérieures qui est à peine concave sous l'apex, presque droit.

(2) Par la rayure externe des mêmes ailes qui est moins concave, sa doublure interne étant d'ailleurs beaucoup moins onduleuse et bien plus rapprochée de la rayure elle-même.

(3) Enfin, par la structure des ocelles dont la fenêtre est extrêmement réduite aux postérieures, presque virtuelle aux antérieures où elle est envahie par le jaune et dont l'anneau gris-rosâtre occupe une largeur démesurée, le croissant blanc distal étant encadré par deux étroits lisérés rouges ; l'anneau noir aux ailes, antérieures, se rattache à la costa par un tractus noir. Envergure, 168 mm.

A. **prelarissa** sp. nov. (fig. 8).

Deux ♂ ♂, l'un (type) des flancs du Mont Korintji, 7,300 pieds ; l'autre de North Korintji Valley, 5,000 pieds.

Voisin de *larissa* Westwood, avec la rayure médiane et la partie distale de la rayure externe des ailes antérieures ondulées lunulaires, celle-ci, toutefois, beaucoup moins que dans *larissa*. Se distingue d'ailleurs de cette dernière :—

(1) Par ses ailes qui ne sont pas du tout ondulées sur leur bord externe et dont les antérieures sont moins falquées sans troncature apicale.

(2) Par les ocelles qui sont moins larges et dépourvus de fenêtres, celles-ci étant remplacées par une petite tache jaune.

(3) Par la position de l'ocelle antérieur qui est fort éloigné de la costale et sans relation avec celle-ci.

(4) Par la coloration qui est d'un brun rougeâtre, foncé en dessus, avec quelques éclaircies jaunâtres, d'un gris-brun rose en dessous, sans rayures externes apparentes, contrairement à ce que l'on observe dans *larissa* où les deux moitiés onduleuses de la rayure externe sont fort apparentes. Les ocelles sont très effacés en dessous. La radiale antérieure naît du pédoncule des radiales comme dans *paphia* et non de la cellule comme dans l'exemplaire de *larissa* que j'ai sous les yeux. Envergure du type 125 mm., du cotype 141 mm.

A. **mylittoides** sp. nov. (fig. 9).

Une ♀ de North Korintji Valley, même chasse que le cotype de l'espèce précédente.

Voisin surtout de *surakarta* Moore, et, comme cette espèce javanaise, se distingue de *mylitta* Drury par la forme des ocelles qui sont ovalaires, allongés dans le sens longitudinal, avec une grande fenêtre allongée dans le même sens, très différents par suite des ocelles de *mylitta* qui sont arrondis comme leur fenêtre : d'ailleurs la rayure externe des ailes antérieures est droite, presque sans inflexion terminale vers l'apex, contrairement à ce que l'on observe dans *mylitta* ; la rayure externe des postérieures est onduleuse comme dans *surakarta*. Se distingue de cette dernière espèce :

(1) Par sa coloration qui est d'un brun rouge riche uniforme.

(2) Par ses rayures qui sont d'un brun violacé, sans ligne blanche bordante, mais avec des traces de blanc rose. Le corps est jaune d'ocre comme les ailes dans *surakarta,* brun-rouge comme celles-ci dans *mylittoides.* Dans les deux espèces, le collier est large et gris, les antennes sont jaunes. En dessous, la teinte est d'un brun plus jaunâtre, avec abondance de poils gris, sauf dans la région marginale ; les rayures interne et mediane sont très accentuées et d'un brun rougeâtre ; la rayure externe est indiquée par une série de taches noirâtres internervulaires. En dessus, la fenêtre des ocelles est entourée d'un filet jaune, auquel fait suite un large anneau gris-brun, remplacé proximalement par du rouge renfermant le croissant blanc ; suivent un filet proximal jaune qui s'arrête au croissant blanc, puis un anneau noir externe un peu plus large qui s'arrête au même niveau. En dessous, les ocelles ne sont pas moins bien marqués, mais la fenêtre est entourée de trois anneaux complets successifs, un jaune interne fort étroit, un moyen large et gris rose, un externe blanc ; vient ensuite l'anneau noir qui devient rougeâtre proximalement. Envergure, 148 mm.

Cette espèce semble être une modification géographique de *surakarta* qui parait être lui-même une forme orientale de *mylitta.* Avant de se prononcer, il convient d'en connaître le mâle.

A. Roylii **korintjiana** nov. var. (fig. 5 ♂, 15 ♀).

Deux ♂ ♂ et une ♀ des flancs du Mount Korintji, un ♂ de North Korintji Valley.

Très semblable aux *Roylii* indiens dont il ne se distingue guère que par les traits suivants : chez le mâle, l'apex saillant est notablement plus large, chez la femelle la bordure blanche de la rayure externe est bien plus prononcée ; dans les deux sexes, la fenêtre des ocelles, en-dessous, présente une bordure jaune bien plus forte et plus foncée souvent de couleur orange. La taille est également plus grandee Envergure du mâle 160-170 mm., de la femelle 150 mm.

A. **Pratti** sp. nov. (fig. 7 ♂, 6 ♀).

Deux ♂ ♂ et une ♀ de Barisan Range, western slopes, S.W. de Sumatra, 2,500 pieds.

Du type net de *Helferi* Moore dont il se distingue au premier abord par la forte rayure médiane des ailes antérieures qui, sur la face dorsale, traverse l'ocelle au lieu d'être extérieure à celui-ci, et par la structure de l'ocelle qui, dans les deux sexes, est complètement aveugle ou avec une fenêtre presque imperceptible, sans traces de jaune, ou excessivement peu. Les ocelles sont bien plus effacés, et leur anneau gris, plus sombre, envahit presque tout l'ocelle, sauf plus ou moins de sa partie proximale rosâtre qui renferme le croissant blanc. L'apex des ailes antérieures du mâle est plus saillant, plus étroit, le bord externe des mêmes ailes plus excavé, leur rayure externe s'éteint bien avant le bord costal ou sa terminaison est à peine indiquée ou nulle.

La coloration, dans les deux sexes, est d'un brun rosâtre foncé, très différente du ton jaune ou rose beaucoup plus clair d'*Helferi* ; la taille est également plus faible. Envergure du mâle, 115 mm. (au lieu de 140 à 150) ; de la femelle, 117 mm. (au lieu de 150 à 165).

Dédié au voyageur Pratt dont les riches récoltes sont décrites dans cet opuscule.

A cette description des *Antheraea* recueillis par Mr. Pratt, je crois utile de joindre celle des formes suivantes que j'ai trouvées dans les collections du Muséum National d'Histoire Naturelle de Paris :—

A. **larissoides** sp. nov.

Un ♂ et une ♀ du Haut Tonkin, le mâle donné au Muséum par le Colonel Roget, la femelle par le Dr. Girard qui la recueillit près de Langson. Se distingue de *Frithi* Moore par la rayure distale externe qui est lunulaire comme dans *larissa* et *prelarissa* et non continue et droite comme dans *Frithi* ; se distingue d'ailleurs de *prelarissa* par ses ocelles assez largement fenêtrés ; de *larissa* par ceux des ailes antérieures qui ne sont pas pédonculés. Le mâle est jaunâtre pâle, mais envahi par du brun sale qui occupe toute la région marginale, ainsi que par les rayures qui sont d'un brun plus foncé. Le même brun plus terne s'observe chez la femelle, mais le fond, depuis la base jusqu'à la rayure externe, est gris roussâtre. Antennes d'un brun jaunâtre. Les ocelles du mâle sont arrondis avec fenêtre transversalement ovale ; ceux de la femelle sont longitudinalement ovalaires avec fenêtre allongée dans le même sens, surtout aux ailes antérieures où la fenêtre est très grande. Le dessous plus grisâtre, avec l'anneau moyen des ocelles tirant au rosâtre, la rayure médiane en fascie non ondulée, les autres rayures moins distinctes. Les ailes antérieures de la femelle sont notablement falquées, beaucoup moins toutefois que celles du mâle qui, en ce point, rappelle beaucoup *Frithi*. La radiale antérieure naît du pédoncule des radiales comme dans *Frithi*, *prelarissa*, non de la cellule comme dans *larissa*. Envergure du mâle, 125 mm. environ ; de la femelle, 152 mm.

A. **Raffrayi** sp. nov.

Un ♂ rapporté de Java par le regretté Raffray, à la mémoire duquel je dédie cette espèce. Tient à la fois de *Jana* Holl. et de *gephyra* Niepelt, mais l'apex des ailes antérieures est plus étroit et plus saillant, la coloration d'un brun jaunâtre assez uniforme, et les ocelles, d'ailleurs très effacés, sont aveugles, envahis par l'anneau gris-brun qui a presque la teinte du fond. Les rayures sont très effacées ; pourtant l'externe des antérieures est droite jusqu'au voisinage de la radiale postérieure ; après quoi elle s'infléchit en dehors ; brune comme la précédente, l'externe des ailes postérieures est dédoublée en deux rayures lunulaires, elle est à peu près parallèle au bord externe, tandis que l'externe des antérieures est franchement oblique. Les antennes paille clair. Le jaune des ocelles a totalement disparu ou presque, le demi-anneau externe noir est très net, le rouge proximal est terne, avec indication nette du croissant blanc. En dessous, les ailes et le corps sont un peu plus pâles qu'en dessus, il n'y a plus que la fascie médiane, les ocelles sont à peine sensibles. Envergure, 126 mm.

A. **Pasteuri** sp. nov.

Un ♂ de Java envoyé par le regretté Pasteur qui fut jadis un des plus précieux correspondants du Muséum. Ressemble surtout à *gephyra* Niepelt dont il se distingue par le bord externe beaucoup plus excavé des ailes antérieures, la rayure médiane brun-noir et fort peu onduleuse de ces ailes, la rayure externe des mêmes ailes qui est rouge avec irradiations extérieures roses, et non brune comme dans *gephyra*, enfin par l'absence de toute rayure, sauf la fascie médiane, sur la face inférieure, tandis que *Niepelti* présente en outre deux rayures externes lunulaires et parallèles. Les ocelles sont très nets sur les deux faces, avec les anneaux jaunes normaux en dessus ; en dessous avec deux anneaux concentriques complets, le gris rosâtre et le blanc. Coloration gris roussâtre rose tournant au gris en dessous. Antennes brunâtres. Radiale antérieure comme dans les deux espèces précédentes. Envergure, 111 mm.

A. ***Frithi*** **javanensis** nov. var.

Trois exemplaires ♀ ♀ de Batavia envoyés au Muséum par le dévoué Paul Serre. Ce sont des ***Frithi*** semblables à ceux de l'Inde, mais avec la fenêtre des ocelles antérieurs beaucoup plus grande, la rayure médiane complètement effacée ou a peine distincte, la rayure externe plus oblique. En somme, diffère peu du type. Deux exemplaires de couleur jaune, envergure 110-114 mm. ; un autre plus grand, de ton gris foncé, envergure 128 mm. environ.

Genre *Sonthonnaxia* Watson.

S. maenas **recta** nov. var. (fig. 4).

Un ♂ et une ♀ de North Korintji Valley, 5,000 pieds.

Tient de *saja* V. Eecke et *Diana* Maass., mais se distingue au premier coup d'œil par l'aile antérieure du mâle dont la costa est très peu infléchie vers l'apex et le bord externe *absolument rectiligne*. L'ocelle antérieur du mâle est beaucoup plus grand que celui des *maenas* typiques et, sur la face inférieure, présente un court pédoncule brun foncé ; la rayure externe onduleuse est de direction plus irrégulière, sur les deux faces fortement infléchie vers la base à son bout costal. La rayure interne est plus rapprochée du thorax, presque à mi-chemin entre celui-ci et l'ocelle. Le jaune des ailes antérieures tire beaucoup plus au vert, et le vert domine dans toute la moitié extra-ocellaire des ailes postérieures, le jaune vert est prédominant sur toute la face inférieure.

La femelle est beaucoup moins facile à distinguer ; toutefois, la tendance au vert y prédomine de même et la rayure interne des ailes antérieures est beaucoup plus rapprochée de la base que dans les *maenas* typiques. Envergure du mâle, 121 mm. ; de la femelle, 128 mm.

(II) SOUS-FAMILLE DES ATTACIENS.

Genre *Philosamia* Grote.

Ph. Cynthia ceramensis Bouvier.

Un ♂ de Mansuela, Central Ceram.

Du groupe de la var. *insularis* Vollenh. avec la forme des ailes et des rayures rappelant tout à fait *tetrica* et *mindanaensis* de Rebel. Mais plus grand que l'un et l'autre, la longueur des ailes antérieures étant de 70 mm. au lieu de 58 pour *tetrica* et 53 pour *mindanaensis*. Se distingue de l'un et de l'autre :—

(1°) Par l'apex plus large et plus arrondi des ailes antérieures ;

(2°) Par sa tonalité brun clair où, partout, s'introduit du jaune, notamment dans la partie postérieure des ailes de la première paire, et autour de la vaste aire rosâtre qui occupe l'apex en avant de la tache ocelliforme noire ;

(3°) Enfin, et surtout, par les deux macules noires qui se trouvent en arrière de cette tache, l'une étroite et effilée au bout externe de la première médiane ; l'autre triangulaire entre cette médiane et la deuxième. Les rayures sont marginées de blanc ; celui-ci sur la rayure externe, flanqué d'une bande rose qui s'évase en flammes triangulaires d'autant plus pâles et blanchâtres qu'elles se rapprochent de la ligne submarginale. Les deux moitiés de la rayure interne forment, par leur rencontre, un angle presque droit et peu saillant, au contraire de ce que l'on observe dans les deux variétés voisines où l'angle est très saillant et ne dépasse guère 45°. La lunule des ailes antérieures peu arquée comme dans *mindanaensis* mais ne touchant pas les prolongements de l'angle. Le dessous comme le dessus, mais plus clair et sans rayure interne.

J'ai brièvement signalé cette forme dans une communication recente (novembre, 1927) à l'Académie nationale d'agriculture de France.

Genre *Attacus* L.

A. Crameri Felder.

Trois beaux ♂ ♂: L'un de Manusela, Central Ceram, ressemblant tout à fait à l'*Atlas* de Stoll (in Cramer IV, 68, 381, fig C), qui est le type de l'espèce choisi par Felder; le deuxième de Kako Tagalago, Central Buru, 2,700 pieds, et le troisième de Gamoe Mrapat, Central W. Buru, 5,000 pieds.

Ces deux derniers avec la partie hyaline des fenêtres beaucoup plus grande et la fenêtre antérieure en triangle longue pointe dirigée du côté externe. Malgré cette différence, les trois mâles sont semblables, du même type que l'exemplaire de Stoll et rouges comme lui. Toutefois, la rayure externe des ailes antérieures est peu sigmoïde dans la figure de Stoll, tandis qu'elle l'est beaucoup, autant que chez *Atlas*, dans les exemplaires précédents.

Deux ♀ ♀ de Ceram Central, 3,000 pieds.

La femelle de *Crameri* n'a été ni décrite ni figurée que je sache Au premier coup d'œil, on la croirait d'une toute autre espèce que le mâle de *Crameri* et assez semblable à la femelle d'*Atlas Atlas* L. En fait, elle ressemble au mâle et se distingue des autres *Attacus* :—

(1) Par sa ligne submarginale qui est nulle ou à peu près aux ailes antérieures, à peine sensible aux postérieures et dans tous les cas dépourvue de sinuosités bien distinctes ;

(2) Par la rayure interne des ailes antérieures dont les deux parties se réunissent suivant un angle très peu saillant, fort obtus, le côté postérieur prolongé passerait en dedans de la fenêtre, tandis qu'il présente la même direction que le bord postérieur de celle-ci dans *Atlas Atlas* ;

(3) Par la fenêtre des ailes de la seconde paire, le côté anterieur de cette fenêtre, et surtout le postérieur, étant fortement concaves ;

(4) Par la rayure externe des mêmes ailes qui, au lieu de se pro-

longer en arrière pour joindre le bord anal suivant un angle très aigu, rencontre ce bord à angle droit (femelle) ou même remonte un peu en avant (mâle). La saillie apicale largement rose comme dans le mâle ; comme dans le mâle aussi, les taches submarginales des ailes postérieures sont rouges et les rayures interne et externe des mêmes ailes, en dessous, se réunissent sur la subcostale suivant une ligne droite assez longue. Forme générale et rayures externes d'*Atlas Atlas* ; les fenêtres sont grandes, triangulaires, faiblement bordées de jaunâtre, puis de noir, fortement convexes du côté proximal ; ces fenêtres, comme l'accessoire fusiforme des antérieures, n'atteignent pas la rayure externe. Coloration d'un brun jaunâtre ou rougeâtre assez pâle ; toute autre que celle du mâle.

Envergure du mâle, 225—230 mm. ; de la femelle, 243 mm.

A. atlas sumatranus Frühst.

Un ♂ des flancs occidentaux de Barisan Range, S.W. de Sumatra, 2,000 pieds, et une ♀ de North Korintji Valley, 5,000 pieds.

Je rapporte les deux exemplaires à la variété *sumatranus* bien que cette forme ait été insuffisamment caractérisée par Fruhstorfer ; c'est parce qu'ils ont l'apex très saillant qu'ils semblent se rapprocher de cette variété, mais à cet égard ils sont loin d'égaler le *gladiator* avec lequel Fruhstorfer compara *sumatranus*. Dans les deux exemplaires, la partie blanche des rayures externes est large et presque dépourvue d'écailles, la ligne submarginale assez épaisse, l'arceau formé en dessous par la rencontre des deux rayures touche franchement la subcostale (femelle) ou s'aplatit contre elle (mâle), la rayure externe qui constitue la branche distale de cet arceau est fortement dentée sur les deux faces, enfin la branche postérieure de la rayure interne des ailes antérieures est rectiligne. Chez le mâle, le côté antérieur de la fenêtre des ailes antérieures est au moins aussi long que le côté basal ; chez la femelle, la fenêtre des ailes postérieures est dilatée proximalement, convexe, puis se rétrécit assez brusquement pour former les deux autres côtés du triangle qui sont subégaux.

Envergure du mâle, 228 mm. environ : de la femelle, 220 mm.

Genre *Coscinocera*.

C. Anteus Bouvier.

Une ♀ de Menoo River, par 4,000 pieds, Monts Weyland.

L'exemplaire, un peu mutilé, présente tous les caractères de la femelle type, notamment ceux, très importants, des ailes postérieures (brièveté et taches noires de la queue, convexité régulière de la rayure

CORRIGENDA.

(Vol. II, Part 2, Plates II—VII.)

PROFESSOR E. L. BOUVIER, the author of "Eastern Saturniidae with Descriptions of New Species," has recently pointed out to us that the explanation of and references to the figures accompanying this article are mostly incorrect. He has forwarded us a revised explanation of Plates II—VII. A printed copy of this has been forwarded to all those who received this part of Volume II, so that it may be inserted in place of the page already published.

All copies of Volume II, Part 2, remaining in stock have been similarly corrected.

EDITORS.

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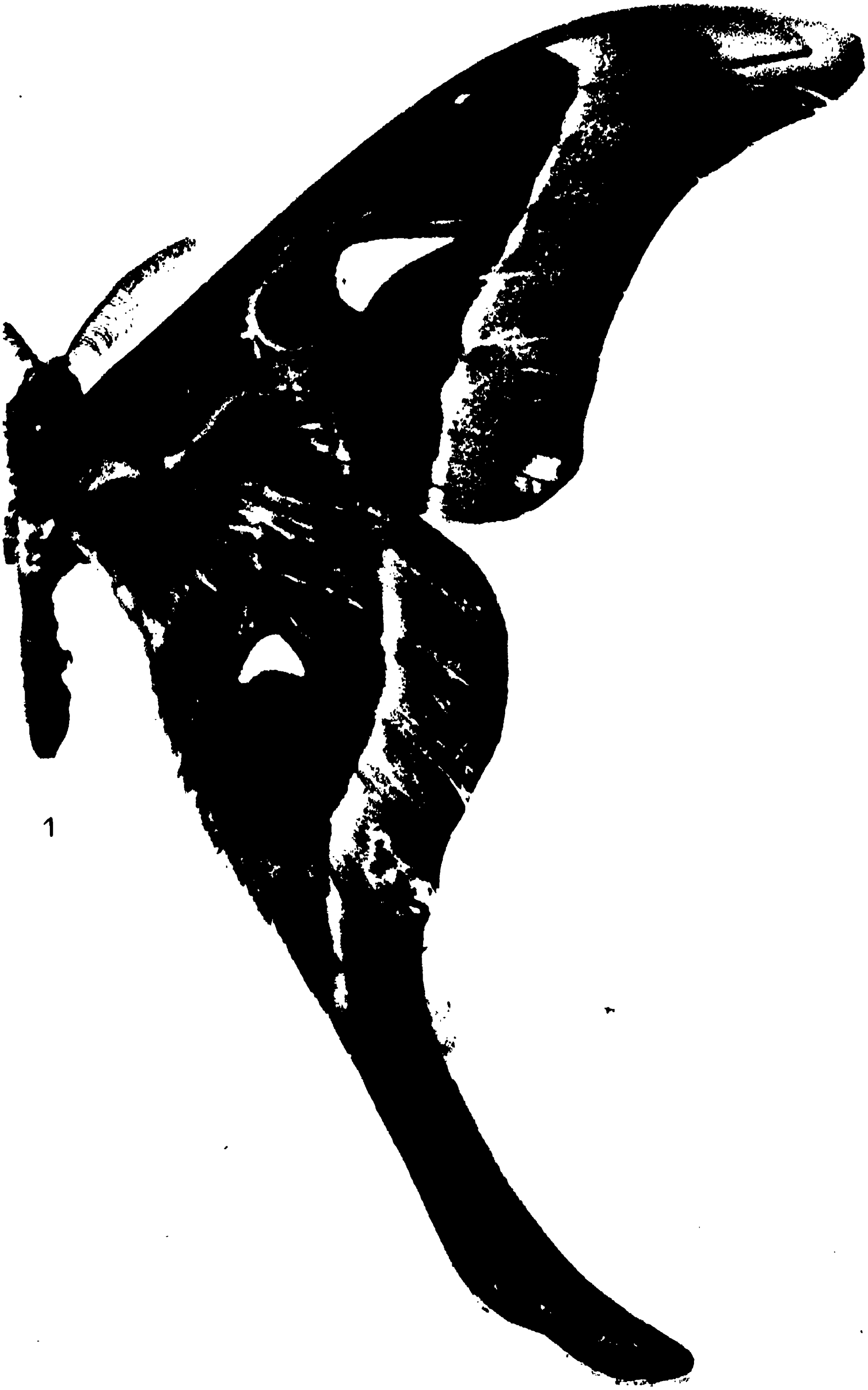

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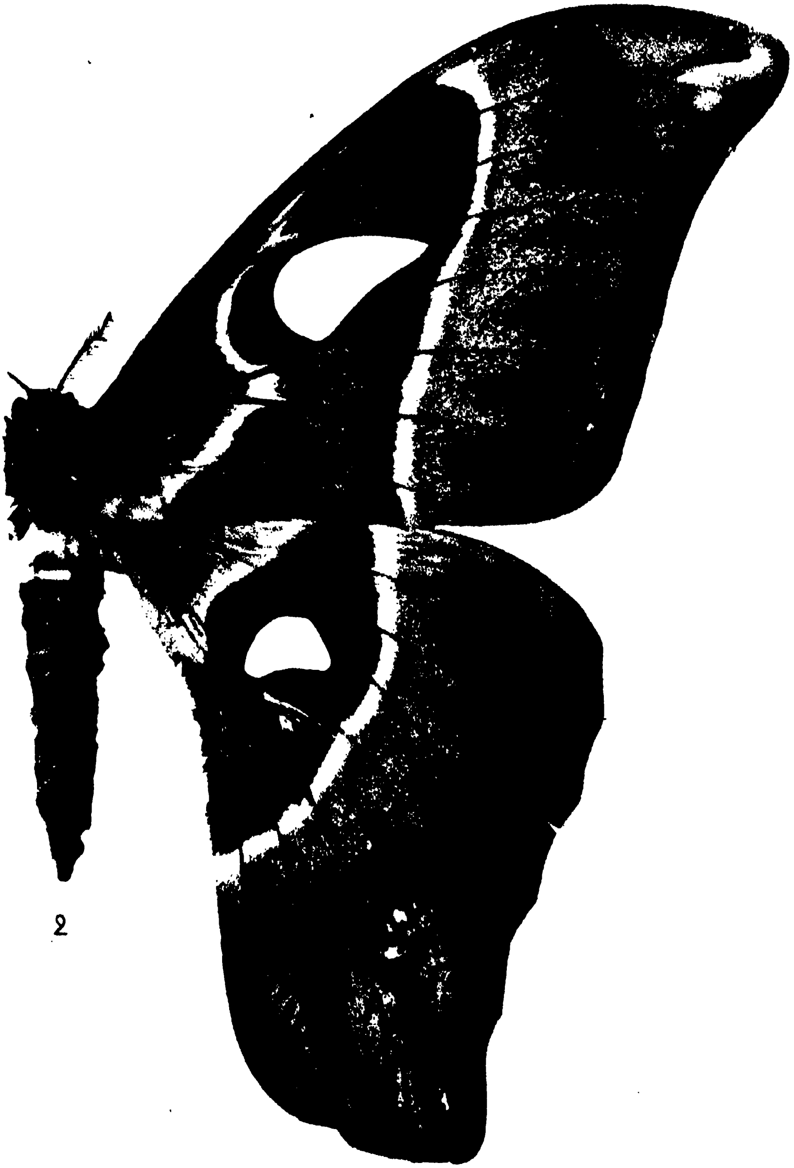
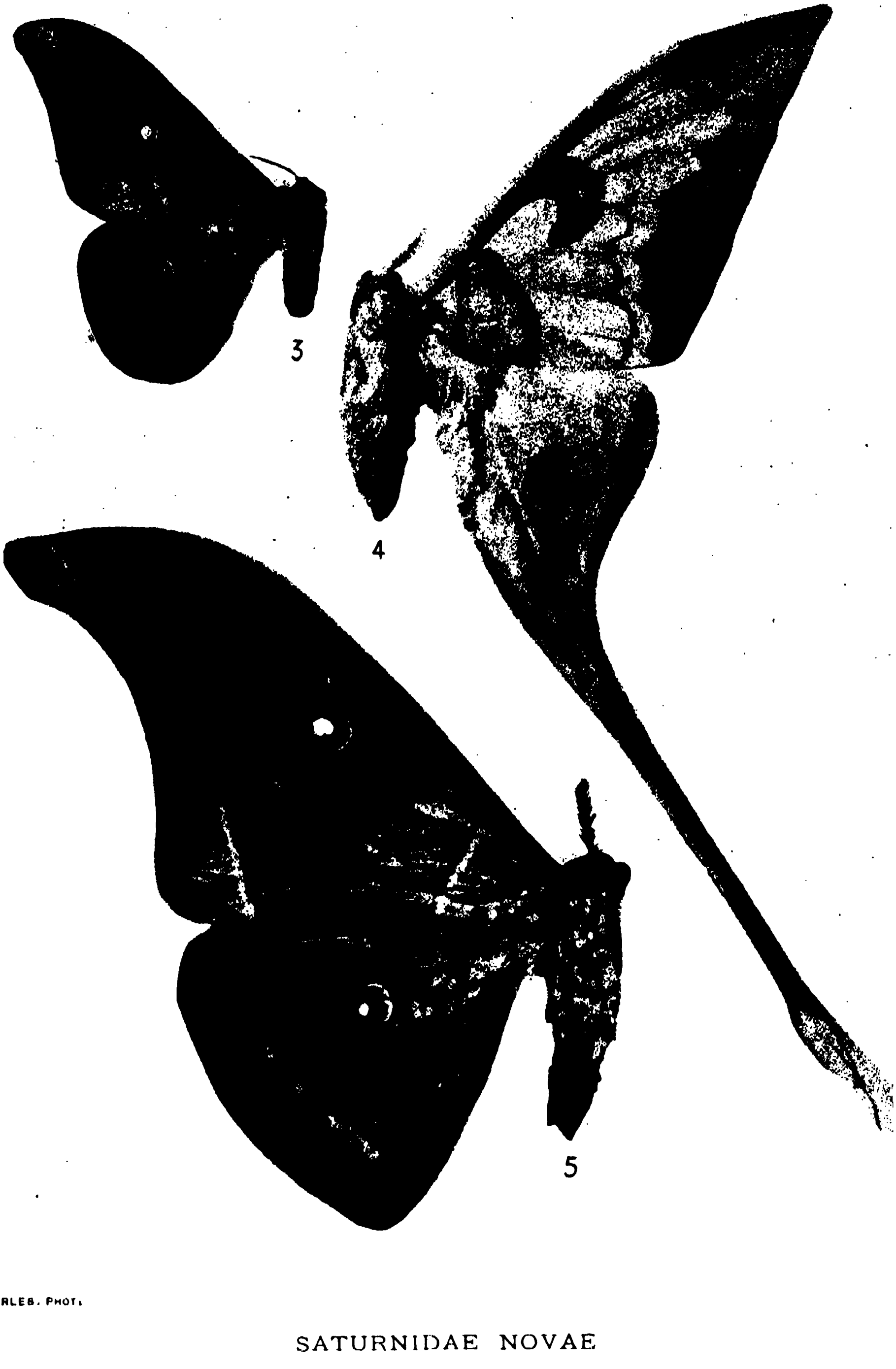
L. LE CHARLES PHOT.

SATURNIDAE NOVAE



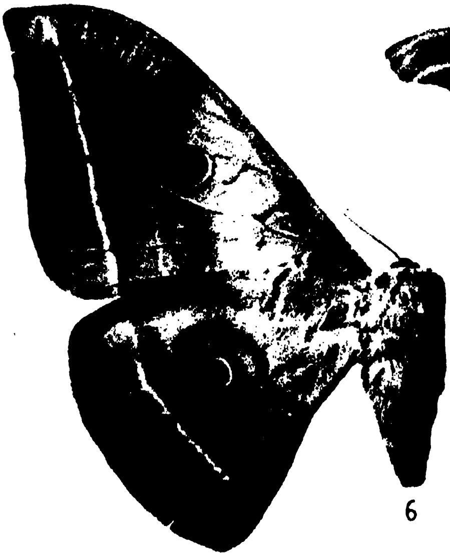
L. LE CHARLES. PHOT.

SATURNIDAE NOVAE



L. LE CHARLES. PHOT.

SATURNIDAE NOVAE



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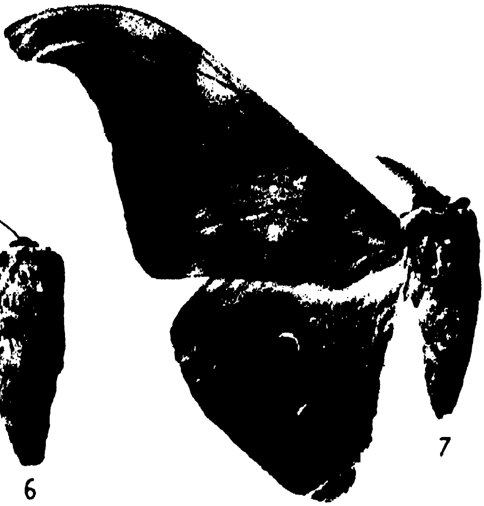

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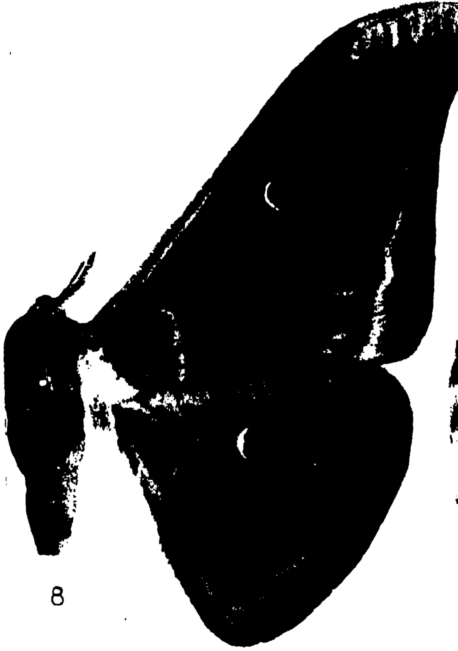

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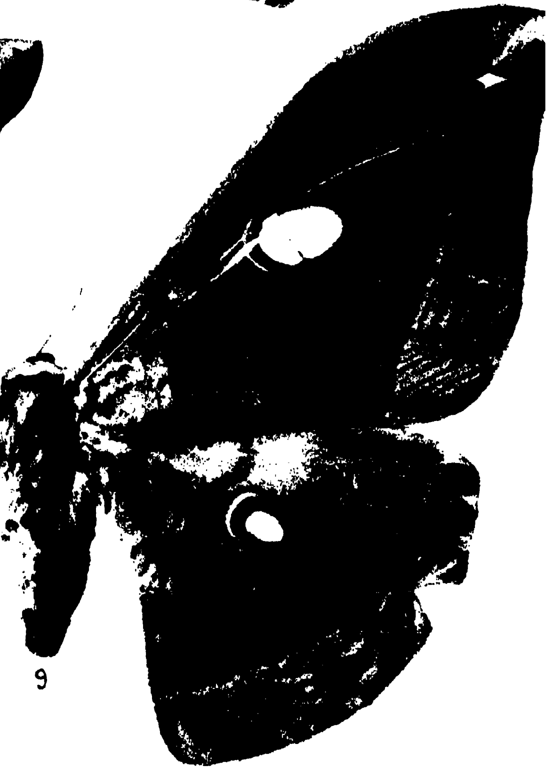

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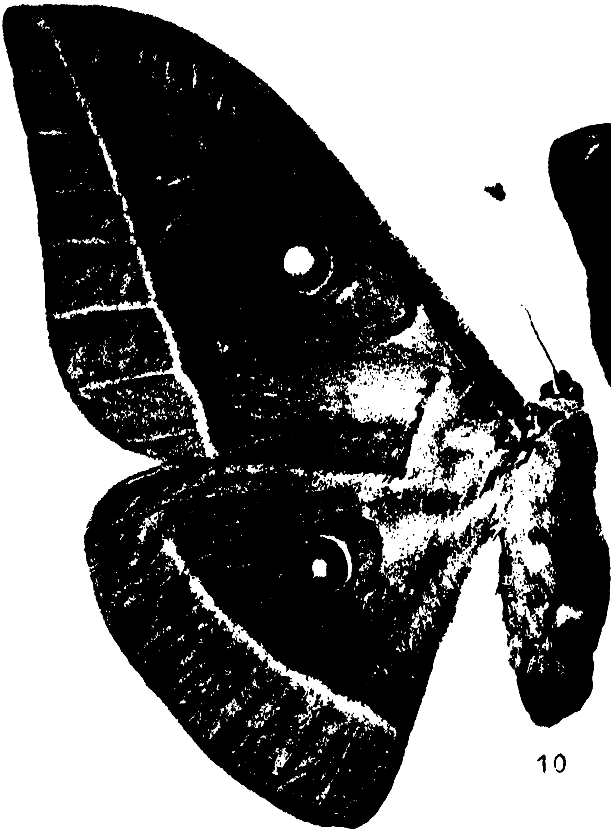
L. LE CHARLES. PHOT.

SATURNIDAE NOVAE



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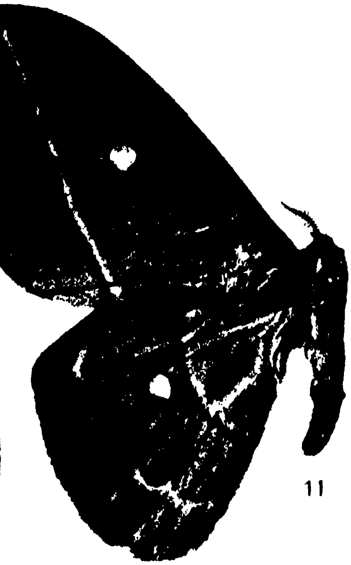

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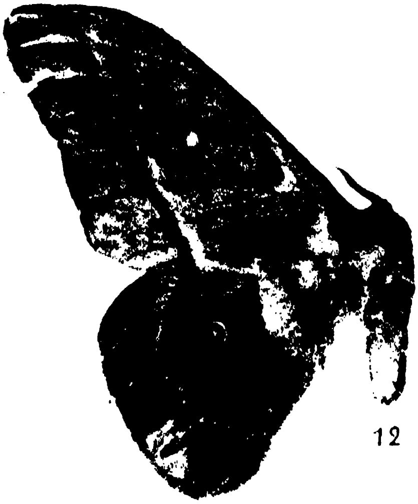

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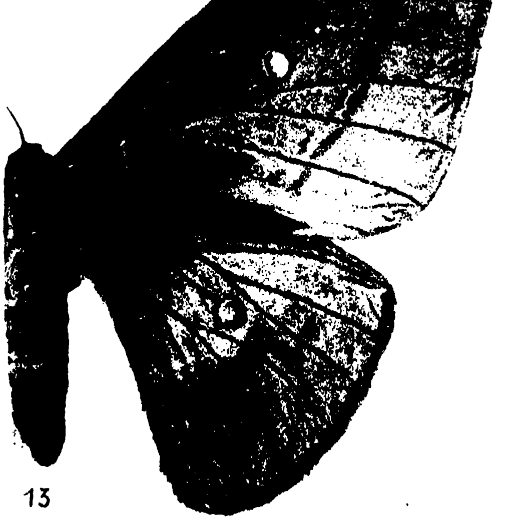

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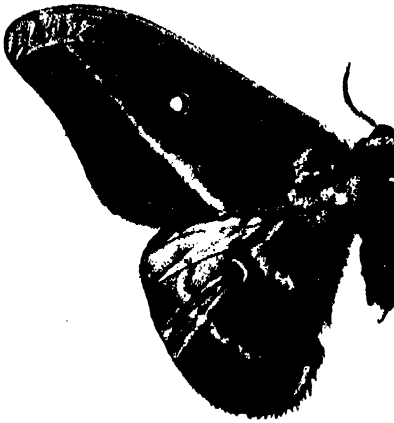
L. LE CHARLES PHOT.

SATURNIDAE NOVAE



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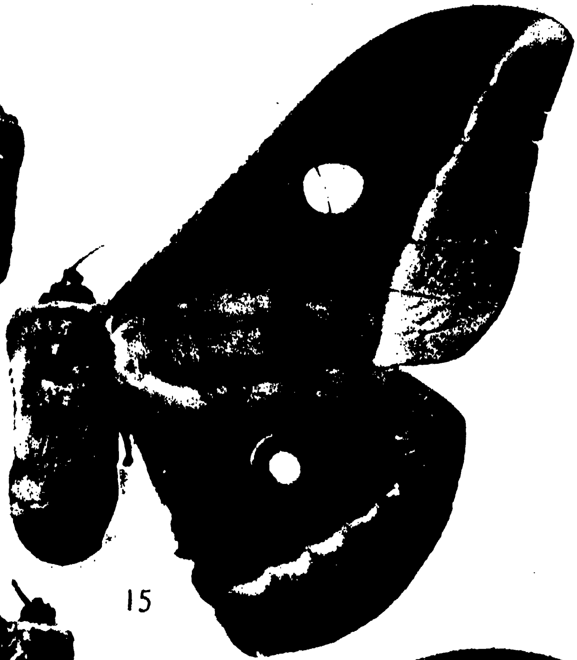

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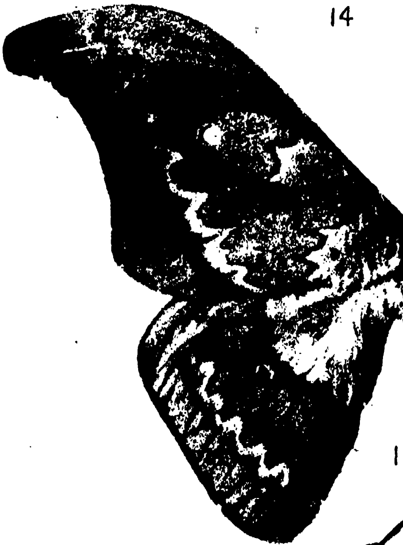

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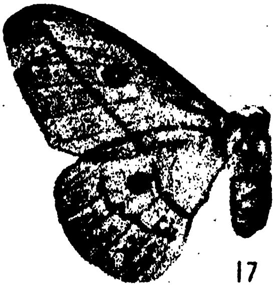

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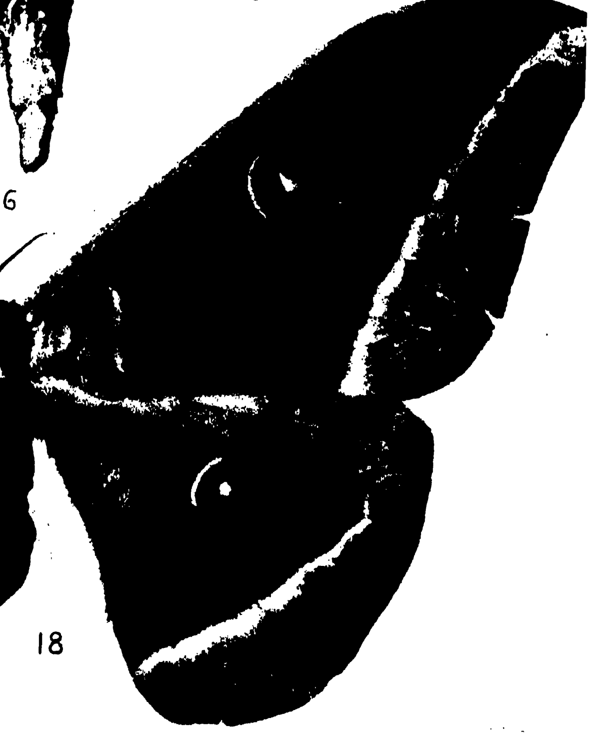

18

L. LE CHARLES PHOT.

SATURNIDAE NOVAE

externe). Les types proviennent des montagnes du district de Vanapo en Nouvelle Guinée anglaise. Ils sont représentés dans les figures 1 (♂) et 2 (♀).

C. Hercules eurystheus Rothschild.

Un ♂ de Nomnagihe, 25 milles au S. de Wangaar, 2,000 pieds.

L'exemplaire présente tous les caractères essentiels signalés par Rothschild, notamment la grande distance qui sépare le bord proximal de la fenêtre antérieure du fragment intracellulaire concave de la rayure interne. Cette fenêtre, toutefois, n'atteint pas la rayure externe et sa bordure jaunâtre proximale n'a guère plus d'un millimètre de largeur. La forme paraît propre à la Nouvelle Guinée; elle fut décrite et figurée par Charles Oberthür sous le nom d'*Hercules* en 1894. ("Etudes d'Entomologie," xix, p. 34, pl. 1.)

spot at end of second line, which spot is much larger than in *hermearia* ; some blue-whitish interneural dots on this shade from R^2 hindwards.

Hind wing similar to that of *hermearia*, rather more strongly marked the pinkish shade beyond the line broadening apically.

Underside correspondingly much more heavily marked than in *hermearia*, the rufous and purple-grey shades largely occupying the distal area.

♀. Slightly brighter still, the blackish markings almost obsolete, except for the cell-dot and costal dots, the red shading a little brighter. The absence of tornal spot especially distinctive.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, type ♂ and another; North Korintji Valley, 5,000 feet, September-October, three ♂ ♂, one ♀; Barisan Range, 2,500 feet, October-November, two ♂ ♂.

29. *Mimochroa* **pyricoetes** sp. nov.

♂, 40 mm.

Face, crown and collar pale olive; side of head and palpus orange-chrome. Head and body concolorous with wings, front of thorax mixed with red, pectus brighter than underside of fore wing.

Fore wing with the fringe slightly more wavy than the termen, the angle at R^3 rather sharp; variegated, the ground-tone perhaps light-brown which shows in parts of basal area, in an ill-defined band between antemedian and median, and in the anterior part of subterminal area, the rest mottled or clouded with darker red-brown and purple-brown; the whole surface with fine dark strigulæ, the markings in consequence indistinct; antemedian diffuse, angled in cell, then slightly sinuous; median shade dark red-brown, crossing the blackish cell-mark, anteriorly bent proximad, but here so thickened as to obscure the bend, posteriorly almost touching the postmedian; postmedian line fine, nearly as strongly angled behind R^1 as in *angulifascia* Moore, red-brown, defined distally (except about the radials) by a fine line of violet-whitish scaling; some blackish subterminal spots, the strongest one behind R^3; a dark red-brown terminal line from R^3 forward, thickening gradually to apex; fringe dark red-brown, at base slenderly and interruptedly light-brown, at tips between the veins white.

Hind wing with termen slightly wavy, with the usual angle at R^3; general coloration as on fore wing, costally and apically light, abdominal region dark, purplish-mixed; postmedian line moderately angled at radial fold, median fine, straight, almost meeting it at both ends; the enclosed area red-brown; some dark subterminal spots; fringe as on fore wing.

Underside bright orange (a little redder than in *albifrons* Moore); posterior part of distal area paler, slightly mixed with vinaceous and (especially on fore wing) with an ill-defined whitish patch about the medians; a fine, common, distally white-edged subterminal, as in the *gynopteridia* group; fore wing with fine black cell-dash, indistinct grey antemedian line and median costal spot; some blackish subterminal spots, the only conspicuous one on the fore wing being in cellule 6; fringes nearly as above.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, type; North Korintji Valley, 5,000 feet, September-October, a darker, less reddish aberration.

30. *Fascellina* **aua** sp. nov.

♂, 42—44 mm.

Group of *chromataria* Walk., but abundantly distinct as follows:—

Fore wing with hind margin still more lobed proximally to middle and more deeply excavated beyond middle; prevailing hues Dresden-brown and cinnamon-brown, only reddened at costa and with a dark streak subcostally.

Hind wing with the apical excision deeper, the termen from SC^2 to tornus straighter.

Fore wing beneath mottled in various shades of grey, the cell-spot cinnamon-buff, the characteristic dark band beyond it greatly accentuated. Hind wing beneath very weakly marked, irregularly suffused with red except costally.

One aberration has the fore wing above darker clouded, the hind wing above more tinged with red.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, type and paratype ♂, together with the aberration; North Korintji Valley, 5,000 feet, one ♂.

31. *Garaeus* **phthinophylla** sp. nov.

♂, 37 mm.

Structure and shape about as in *apicata* Moore (*Proc. Zool. Soc.*, 1867, p. 617), of which it may possibly be an extraordinary form. General coloration lighter.

Fore wing with costa slightly less sinuous, the apical end appearing less gibbous ; whitish, only slightly suffused here and there with purple ; irroration rather coarse, largely rufous ; proximal area suffused with rufous to beyond antemedian line ; a rufous terminal patch from middle of cellule 3 to apex, about 2·5 mm. broad at R^3, tapering to a point at apex ; a Kronberg's green or yellowish-olive subapical patch ; antemedian line diffusely dusted with purple, rather more vertical to hindmargin than in *apicata* (the subcostal angle normal).

Hind wing whitish in costal area and a rather extended tornal region, the rest suffused with rufous and purple, becoming rather deeper purple at termen ; postmedian rather more deeply excurved between R^3 and M^2 than in *apicata*, the green patch proximal to it large, with a few white dots on its proximal part.

Underside paler than in *apicata*, more variegated with ochreous ; the green patches indicated ; hind wing terminally tinged with red, a spot between R^3 and M^1 (which is red in certain forms of *apicata*) ochreous.

Habitat.—Barisan Range, 2,500 feet, October-November, 1921.

32. *Buzura insularis* Warr. **illucescens** subsp. nov.

♂, 66—70 mm.

Differs from *insularis insularis* Warr. (*Nov. Zool.* i, p. 428, Nias) in the duller and darker colouring, the pale buff ground-colour being less suffused with ochreous (sometimes, indeed, more suggesting an olivaceous tinge), the black irroration very heavy, notably on the proximal part of the hind wing, above and beneath ; black markings in general heavier (though variable) the double antemedian of the fore wing thick between M and hindmargin, postmedian well developed in posterior part, the costal spots well-developed, including a slighter median one.

Habitat.—Barisan Range, 2,500 feet, October-November, 1921, seven ♂ ♂.

Similar forms which I do not at present consider worthy of a separate name, occur at Singapore.

33. *Buzura* **leucocrossa** sp. nov.

♂, 54—60 mm.

Face densely scaled ; black-brown, mixed (at least in upper part) with white. Palpus black. Tongue short. Antenna bipectinate to two-thirds or rather beyond (*circ.* 36—38 joints) with moderate, rather stiffly outstanding branches (about four times diameter of shaft). Thorax above white, irrorated or strigulated with black, and with a transverse dark band at back of patagia; beneath dark fuscous. Abdomen predominantly ochreous-brown. Femora with dark hair. Tibiae glabrous; hind tibia with the proximal spurs well beyond middle, but not close to terminals (approximately at two-thirds). Legs dark (especially the first pair), ringed with whitish.

Fore wing in shape and aspect recalling a *Biston* rather than a *Buzura*; very deep chocolate-brown; an ill-defined white patch close to base; a narrow white, dark-dusted distal border, separated from the ground-colour by the broad, irregular white subterminal; lines black, not very noticeable; antemedian from quarter costa to just behind quarter hindmargin, gently curved, accompanied proximally by a still less distinct line, which is angled subcostally; median zigzag, angled round outer side of cell-spot but generally diffusing with it; postmedian forming an outward curve in anterior half and a second (usually more angular) behind M^2; termen with large black interneural dots, which are continued on the short, white fringe.

Hind wing white, with the hair of abdominal region dirty light-brown; coarse, irregular black irroration, strongest in distal part and especially along M^1; the commencement of a spotted postmedian line from near this margin; a deep chocolate-brown spot close to tornus.

Underside with the fore wing much more mixed with whitish.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September 1921, sixteen ♂♂.

34. *Elphos* **praestans** sp. nov.

♂, 102—118 mm.

General structure and coloration as in the *hymenaria* group.

Fore wing with SC^2 from cell (in one example stalked); extreme base black or black-mixed; some white admixture between this and the ill-defined subbasal line; antemedian as usual twice excurved, but the anterior curve not or scarcely deeper than the posterior; median thick at costa, broken into spots behind; a costal white patch, marked (in some examples obliterated) by coarse dark irroration, between this and the postmedian; postmedian normal, in anterior part double, a small subtriangular white costal spot between; subterminal line obsolescent at the veins, leaving excurved white marks midway between; ill-defined and rather variable white terminal scaling at apex and in cellule 3.

Hind wing rather long, the dentition strong, the outward projection in front of R^1 much longer than in the allies; markings normal, the base more or less mixed with white, the subterminal broken much as on fore wing; cell-spot rather large, black, with brown centre.

Underside with the pale ground colour suffused with smoky-grey to or beyond cell, irrorated with blackish in an irregular postdiscal band; cell-spots large, black; blackish terminal band broad; irregular whitish terminal markings at apex, at tornus (small) and in cellule 3, on hind wing also in cellule 6; interneural subterminal spots or dots more or less developed.

♀, 116 mm.

White, with dark, in part substrigulate irroration; some red-brown scaling at costal end of the lines; a rather broad, on the fore wing rather direct, median shade, a large subapical patch (broad on fore wing, elongate on hind wing) and irregular subterminal band hindward from M^1, all of this same brown.

Underside with the white much more extended than in the ♂.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, nine ♂ ♂, one ♀.

35. *Xandrames* **opisthochroma** sp. nov.

♂, 91—100 mm.

Head and thorax deep brown, mixed with black; abdomen slightly greyer. Antennal shaft dark, pectinations brown. Legs black-brown, slightly pale-spotted.

Fore wing brown, irregularly striated and clouded with black, the black clouding heaviest between antemedian band and cell-mark and again in a broad but ill-defined subapical shade from costa to termen between the radials; lines black, band-like, oblique, inconspicuous, incomplete, placed much as in *latiferaria* Walk. (List Lep. Ins. xxi, p. 445) but with the median more obliquely excurved after crossing the cell-mark; a better-defined subbasal present; a white, strongly and coarsely irrorated patch between cell-mark and postmedian, narrower than the pale patch of *latiferaria.*

Hind wing xanthine-orange, partly dark-dusted, a little faded basally and costally; a faint grey cell-dot and suggestion (at least on the veins) of a postmedian 5 or 7 mm. beyond; abdominal margin suffused with black-brown to M and M^3; an ill-defined black distal border of about

8—10 mm. breadth, slightly narrower anteriorly than posteriorly, irrorated and strigulated with the ground-colour.

Both wings beneath blackish, the fore wing with a slightly incomplete postdiscal white band, rather narrower, more sinuous and more irrorated than the band of *latiferaria*.

♀ quite similar, the fore wing with rather more admixture of white scaling; fovea narrower and weaker than in the ♂ ; ovipositor extruded.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, type ♂, allotype ♀ and one ♂ paratype; North Korintji Valley, 5,000 feet, September-October, 1921, seven ♂ ♂.

36. *Chorodna pallidularia* Moore **celaenosticta** subsp. nov.

♂, 75—84 mm.

Smaller on an average than the name-typical race from North India. Coloration deeper, the ochreous cloudings being warmer. Abdomen, at least on the anterior segments, with paired black dorsal spots. Wings with the irroration blacker. Fore wing with a black cell-dot. Hind wing with the black cell-spot larger, pupilled with white; the postmedian line anteriorly almost lost in the dark clouding.

Underside more heavily irrorated than in *pallidularia pallidularia*, the markings strongly expressed.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, ten ♂ ♂ ; slopes, 7,300 feet, one ♂.

37. *Erebomorpha fulgurita* Walk. **modesta** subsp. nov.

♂, 68—78 mm.; ♀, 78—84 mm.

Much smaller than *f. fulgurita* from North India. Abdomen above deep brown nearly to extremity.

Fore wing darker than in *f. fulgurita*, the white markings much narrower, changed to buff (in occasional aberrations to brownish).

Hind wing correspondingly modified, the white costal area wanting or extremely restricted.

Underside with the white much more restricted than in *f. fulgurita*, more tinged with buff.

Habitat.—S. W. Sumatra: slopes of Mount Korintji, 7,300 feet, August-September, 1921, eleven ♂ ♂ and four ♀ ♀, including type ♂ and allotype ♀ ; North Korintji Valley, 5,000 feet, September-October 1921, three ♂ ♂ three ♀ ♀.

38. *Ectropis stigmaticosta* sp. nov.

♂, 44 mm.

Shape and structure much as in the rest of the group (*Ruttelerona* Swinh., type *cessaria* Walk.). Antennal ciliation rather long (about 2). Hind tibia not dilated.

Body and wings rather lighter and more tinged with olive than in its congeners.

Fore wing with the dark cloudings slight, a feeble tinge of reddish in hindmarginal region; a few black spots near base; lines and median shade arising from black costal spots at 5, 8·5 and 13 mm. from base. lines punctiform on the veins, the antemedian less oblique than in the allies, not angled subcostally; postmedian more sinuous; subterminal whitish, still more reduced and interrupted than in the allies, showing chiefly as dots in cellules 1*b*, 2, 4, 5 and 6, where they are accompanied proximally and distally by black marks, the proximal rounded in 1*b*, otherwise wedge-shaped, the distal smaller; termen with strong black interneural dots; fringe pale at extreme base and at vein-ends, weakly dark-marked between.

Hind wing analogous, but with only two lines, in which the dots are slightly more connected by dark shading than on fore wing; space between them clear, containing in its centre the small black cell-dot; postmedian markedly more excurved than in the allies; the dark spot proximally to the subterminal not wedge-shaped, a slight band from R^3 to abdominal margin connecting them; pale tornal area much less developed than in *cessaria* ♂.

Underside distinguishable at a glance from that of *cessaria* by the costal spots, excurved postmedian line (notably on hind wing) and small cell-spots of hind wing and by having almost the entire terminal area (beyond the subterminal dots) pale.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921.

♀, 46 mm.

Ground-colour as in the ♂, but with darker irroration and with the distal area heavily dark-clouded (almost solidly blackish beneath except at extreme termen and on hind wing tornally); some subbasal clouding on hind wing; the essential distinctions (costal spots, small cell-spots of hind wing and course of postmedian) as in the ♂.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921.

39. *Ectropis costimacula* (Wileman) **adjuncta** subsp. nov.

♂, 41—42 mm.

Differs from *costimacula* Wileman (1912) in having the postmedian costal patch of the fore wing connected with the base by a costal streak of the same colour, through most of its course reaching SC, at the extreme base tapering.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂ ♂.

Possibly a separate species, as the termen of the fore wing seems slightly more oblique, but otherwise the resemblance is very close.

Wileman described the species (from Formosa) as "*Alcis*?", but the essential structural characters are these of *Ectropis*—antenna serrate-fasciculate, hind tibia dilated, with dark hair-pencil, abdominal spine long, fore wing with fovea, SC^1 and SC^2 free, hind wing with termen rather irregularly crenulate, the deepest concavity between the radials, the strongest tooth at R^3.

40. *Cleora* **hypopoecila** sp. nov.

♂, ♀, 33—37 mm.

Close to *variegata* Moore (Lep. Coll. Atk., p. 240, Darjiling), no doubt a Malayan representative. Antennal pectinations in ♂ rather longer. Abdomen of ♂ perhaps slightly more robust.

Fore wing with $SC^{1,2}$ shortly stalked, SC^1 in the ♀ anastomosing with C (probably variable, as in the allies); ♂ fovea at least as large as in *variegata*, almost scaleless above, with a slight pit or furrow just beyond its middle; general coloration less warm, the ochreous or reddish shades being reduced; markings virtually identical, the postmedian line perhaps oftener punctiform, slightly less excurved, the proximal dark shade of the subterminal scarcely interrupted.

Hind wing with the same specializations as in *variegata*; cell-spot rather large.

Underside rather yellower than in *variegata*, with rather larger cell-spots; fore wing with midterminal pale spot reduced; hind wing with the dark border obsolete posteriorly, about as in *variegata*, in ♀ almost complete.

Habitat.—North Korintji Valley, 5,000 feet, September-October, five ♂ ♂, one ♀.

There is a ♂ from Dili, N.E. Sumatra, in Coll. Tring Mus., with the border of the hind wing beneath rather well developed.

41. *Cleora* **irrita** sp. nov.

♂, 31—39 mm.

Close to *praevariegata* Prout (*Sar. Mus. Journ.*, iii (2), p. 202). Structure nearly the same; fovea slightly larger still. Hindtibial pencil less dark-mixed.

Fore wing with cell-spot larger and deeper black; postmedian line of dots not excurved opposite to it, but running parallel with termen throughout, except for the hardly appreciable curve at each end; the pale band between this and median shade narrower, posteriorly less widened (the median shade being less oblique inward posteriorly); subterminal area much less clouded with black, its prevailing tone more tawny or russet.

Hind wing with the cell-spot large but not very black; markings weak, except for the black dashes at abdominal margin, which are rather less oblique than in *praevariegata*; distal band much less developed, generally reduced to some grey irroration; prevailing tone in subterminal area more ochreous; terminal line much weaker, less crenulate.

Underside similarly with the cell-spots enlarged and the borders (especially that of hind wing) weakened.

♀ rather paler, with the white postmedian band of fore wing less narrow.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, fourteen ♂♂, three ♀♀; North Korintji Valley, 5,000 feet, September-October, one ♂.

Variable, especially in the amount of black shading in the median area, yet not difficult to distinguish. SC^1 of the fore wing, arising from near the base of SC^2 (as in most of the group), usually anastomoses with C, but remains free in three ♂♂ and one ♀. A doubtful ♂, taken with the above series, may be a remarkable aberration, as it has the same large fovea, large cell-spots, etc., but is more likely another close ally. Rather ample-winged, apex of fore wing slightly more rounded, SC^1 arising out of C (i.e., its base obsolete), postmedian perhaps slightly more curved, the pale band proximal to it broadened and more yellowish; both wings with the dark border between developed.

As **obruta** form. nov. (? sp.) I describe a darkened form taken together with the above and provisionally referable to it. Fore wing above almost throughout irrorated and strigulated with blackish, the markings in consequence only showing weakly in deeper black, even the fovea partly scaled; usually (but not invariably) a spot of the ground-colour remaining in cellule 5 just outside the cell-spot. Hind wing above and both wings beneath with the dark irroration similarly heavier, more or less approaching the marginal band of *praevariegata*, though on the hind wing less broad; proximal part of hind wing weakly marked except for the cell-spot. Even the tibial hair-pencil partakes of the general darkening.

Four ♂ ♂, one ♀.

Possible indications that this is a separate species may lie in the scaled fovea and tendency towards stronger crenulation of the termen of the hind wing anteriorly. I at first thought the costa of the hind wing might be a little less arched and the hind tibia slightly less long, but precise measurements do not seem to bear this out.

42. *Boarmia* **ichnochroma** sp. nov.

♂, 40 mm.

Face nearly smooth. Palpus over 1½, porrect, rather stout, second joint rather closely scaled. Tongue rather short. Antennal pectinations long. Abdomen with long hair-scales beneath; spine developed (hind legs lost). Head and body black-grey, pale-mixed beneath; collar and base of antenna marked with pale cinnamon-buff.

Fore wing not broad, termen curved, rather strongly oblique; $SC^{1, 2}$ stalked for about half their length; fovea present; mouse-grey, irrorated with black; a small and inconspicuous black cell-dot; a faintly darkened, not broad median arising from costa well beyond cell-dot, nearly perpendicular (but lunulate-dentate) to R^2, then oblique inward to base of M^1, nearly vertical to hindmargin; a very faint and very thin double, parallel, dark postmedian, its outer element at both ends about 4 mm. from termen, between R^1 and M^1 or M^2 rather strongly excurved, the bend sharp anteriorly, gradual posteriorly; a rather irregular cinnamon (cinnamon-buff overlaid, except at its proximal edge, with orange-cinnamon) band beyond not reaching costa, swollen into a spot before $R,^1$ almost obsolete between the radials, gently incurved posteriorly; veins irrorated with cinnamon outside it; termen with black interneural spots.

Hind wing with termen rather strongly crenulate, the markings continued, more direct, the median crossing the cell-dot, the cinnamon band without anterior spot or radial obsolescence.

Underside paler grey; costa of fore wing buff, strigulated with black;

cell-dot of hind wing rather large; median shade straightish, on fore wing crossing the cell-dot, on hind wing proximal thereto; postmedian blackish, crenulate, on both wings excurved in middle.

Habitat.—North Korintji Valley, September-October, 1921.

43. *Boarmia* **hemiprasina** sp. nov.

♂, 27—29 mm.

Head green, the face rather paler, with a black spot at side and some irroration. Palpus 1½, strongly rough-scaled, third joint rather small, concealed; predominantly black. Antenna pale brown, spotted (at least proximally) with black; pectinations rather long (fully 6), arising proximally on the segments, apical one-sixth not pectinate. Thorax above green, with black spots on wing-tegulae. Abdomen with lateral pencils on last segments; pale grey, more or less dark-clouded. Legs, especially the fore leg, partly blackened; hind tibia not dilated.

Fore wing with fovea not very strong; $SC^{1,2}$ coincident, anastomosing strongly with C; yellowish oil-green to calla-green (slightly variegated, darker and lighter); costal edge light brown, dotted and spotted with black; markings formed of large dots or spots, mostly on the veins, brown, almost entirely overlaid with black; two or three close to base; antemedian double, excurved; the proximal series more elongate, more diffused, the distal one on M placed at base of M^2; cell-mark rather elongate; median shade angled just beyond it, but almost obsolete except costally; postmedian double, angled outward about R^1; subterminal whitish-green, more or less crenulate, broken proximally at R^2—R^3, accompanied proximally by short black wedges and distally by one on R^2; large interneural terminal dots slightly connected by fine waved dark line; fringe with black proximal dots at vein-ends, distally rather paler.

Hind wing with termen not very strongly crenulate; pale grey, with indistinct darker-grey lines; cell-dot small and weak; terminal dots moderate; fringe green, feebly spotted proximally.

Both wings beneath nearly as hind wing above, the fore wing rather more suffused.

♀ similar, but generally larger (28—34 mm.).

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂♂, four ♀♀.

Evidently related to *chloana* Prout (*Sar. Mus. Journ.*, iii (2), p. 206).

Dasyboarmia gen. nov.

Build robust, facies somewhat *Noctuid*. Eye hairy. Face densely scaled. Palpus moderate, second joint bent upward, with dense, moderately outstanding scaling beneath; third joint moderately smooth. Tongue developed. Antenna rather long, in ♂ bipectinate with short branches, the last twelve joints serrate to nearly simple; in ♀ nearly simple with single short bristles. Pectus and coxae densely hairy; fore femur hairy; middle and hind femora in ♂ densely hairy, in ♀ slightly so; mid tibia in ♂ hairy; hind tibia in ♂ not dilated, all spurs developed. Tarsi strongly spinose. ♂ with abdomen beneath densely hairy, anal tufts slightly spreading laterally. Frenulum developed.

Fore wing with termen crenulate; cell not quite half, DC more or less inbent; SC^1 from cell, anastomosing shortly with C, SC^2 free, M^1 approximated at origin to R^3; ♂ without fovea.

Hind wing with termen rather strongly crenulate; cell rather less than half, DC normal; C approximated to SC for a short distance near base, then rather rapidly diverging; SC^2 approximated to R^1, R^2 wanting, M^1 approximated to R^3; undersurface of nearly the whole wing hairy in ♂.

Type of the genus: *Dasyboarmia hyperdasys* sp. nov.

Presumably related to *Hemerophila* and *Medasina*, but abundantly distinct in the hairy eye, densely hairy abdomen and legs of the ♂, etc.

44. *Dasyboarmia* **hyperdasys** sp. nov.

♂, ♀, 49—54 mm.

Head and body brown of varying shades, the thorax above approximately concolorous with the fore wing, the abdomen above more infuscated. Palpus mixed with blackish on outer side and parts of terminal joint.

Fore wing bright brown (about as in *Hemerophila retractaria* Walk., *delineata* Walk., etc., or slightly redder), mixed in varying degree with purple-fuscous, blackish and olivaceous; some dark (under the lens slaty mixed with olivaceous) clouding in proximal area, especially behind cell; cell-dot generally rather large, irregularly surrounded with olivaceous; lines black, formed about as in *delineata*, the antemedian being angulated outward at SC and M near the end of the cell (slightly variable, the posterior angle sometimes as acute as in *retractaria*); subterminal also as in *delineata*, being only well-developed as two or three white, interneural dots between SC^5 and R^2 or R^3, accompanied by longitudinal olivaceous or black dashes; terminal line black, thickened between the veins.

Hind wing much as in *Hem. delineata*, but darker, with much larger black cell-dot and slightly more distal postmedial line.

Both wings beneath much as in *Hemerophila delineata*; cell-spots larger; postmedian, at least on fore wing, slightly more sinuous; subterminal shades always more or less weak.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, fourteen ♂ ♂, including the type; North Korintji Valley, 5,000 feet, September-October, 1921, four ♂ ♂, two ♀ ♀, including the allotype ♀.

Very variable. The commonest forms—from which I have selected the type—are comparatively uniformly mottled, though still inconstant in depth and detail; a few aberrations have the olive shading increased, notably along submedian area; a few have strong blackish bands proximally to the antemedian and distally to the postmedian, sometimes extending so as to occupy a great part of proximal and distal areas.

45. *Medasina* **acribomena** sp. nov.

♂, 57—59 mm.

Face whitish, the upper part spotted with brown. Palpus rather short (scarcely 1½), whitish at base, beneath, and at tip, black-brown on outer side and above. Vertex white. Antennal shaft spotted; pectinations dark, rather long (5—6). Thorax and abdomen white, the patagia brown at extremity. Fore and middle legs spotted, hind leg almost entirely pale, the hair-pencil mixed with ochreous-brown.

Fore wing with termen only slightly waved; white, with pale fleshy-grey transverse suffusions accompanying all the lines and between subterminal and termen; some scattered darker irroration; costal margin irregularly dotted with blackish; four conspicuous brown, black-mixed costal spots at the origin of the lines, rather variable, the median nearly always, and the antemedian generally, larger than the two outer; lines partly brown, lunulate-dentate, the first two deeply, with the teeth inward on the veins, the median excurved outside the obsolescent cell-mark, the postmedian with the teeth outward and the brown element better developed, a brown blotch beyond it between R^2 and M^1; subterminal white, dentate, a dark blotch beyond it at R^2 (weaker on the vein itself than on the folds); interneural terminal dots strong; fringe weakly chequered, darkened against the radial blotch of termen.

Hind wing with termen moderately crenulate; lines of fore wing continued, except the first; cell-spot just beyond median; no dark brown spots except at abdominal end of the lines, that at median slight, that at subterminal rather elongate; terminal dots as on fore wing.

Fore wing beneath with costal edge whitish, irregularly chequered and dotted with black; posterior and distal margins also white; the rest irregularly suffused with pale fleshy-grey; cell-spot strong, a little elongate; antemedian line faintly indicated; median shade fairly strong; a broad dark band between postmedian and subterminal, ending about SM^1 or SM^2, connected with termen by a dark patch between the radials; termen and fringe as above.

Hind wing beneath with cell-spot as strong as on fore wing but sometimes smaller; median shade darkened at costa, generally continued (though weakening) to near abdominal margin; postmedian indicated by a dark costal spot and often faintly traceable beyond; subterminal band nearly as on fore wing, sometimes weakening in posterior half, the radial projection reduced to a slight prong which does not reach termen; terminal dots obsolescent.

♀, larger (65—68 mm.), otherwise similar.

Habitat.—S.W. Sumatra: Barisan Range, western slopes, 2,500 feet, October-November, 1921, three ♂ ♂ (including type), one ♀ (allotype); North Korintji Valley, 5,000 feet, September-October, 1921, three ♂ ♂, one ♀; slopes of Mount Korintji, 7,300 feet, August, 1921, three ♀ ♀.

Closely related to *indentata* Warr. (*Nov. Zool.*, iii, p. 403, Java), larger, less white, antennal pectination not quite so long, bands beneath much more developed, etc. Occurs also in Perak and Mr. Joicey has a large ♂ from Bidi, Sarawak, but I cannot find that it has ever been described. Differs from *vinacea* Prout (*Sar. Mus. Journ.*, iii (2) p. 208) in less long pectinations, less vinaceous colouring, larger midcostal spot, rather more distally placed postmedian line, generally with larger spot beyond, and less broad and heavy dark borders beneath.

46. *Medasina* **embolima** sp. nov.

♂, 79—86 mm.

On an average larger and of a less warm colour-tone than *javensis* Warr. (*Nov. Zool.*, iv, p. 95)—intermediate towards *quadrinotata* Warr. from N. India; black markings stronger than in *javensis*, the posterior triangle formed by contact (or approximation) of median and postmedian of fore wing less narrow, the midterminal pale patch scarcely differentiated, the postmedian of the hind wing more proximally placed, the underside darker.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, five ♂ ♂ ; Barisan Range, western slopes, 2,500 feet, October-November, 1921, two ♂ ♂ .

From *quadrinotata* differentiable, *inter alia*, by the more evenly dentate termen of the hind wing (the tooth at SC^2 less outstanding), and in its much less developed pale band proximally to the postmedian.

47. *Abraxas* **leucoloepa** sp. nov.

♀, 53—59 mm.

Head and body orange-ochreous. Lower half of face, antenna and second and third joints of palpus black. A pair of black dots on occiput. Thorax dotted with black. Abdomen with rather elongate dorsal black spots, smaller subdorsal and lateral series and large paired ventral ones (in the type partly confluent).

Fore wing rather broad ; venation normal (SC^1 out of SC^2, running into C) ; buffy-olive-grey, with only small and irregular and not quite symmetrical remnants of the original cream-white ground-colour, in which stands some dark maculation ; these are : a basal patch behind cell, a costal patch beyond cell, its distal edge strongly oblique inward from about three-quarters costa to R^2 ; an oblique patch from apex to R^3 ; a small one close to tornus.

Hind wing white, with abdominal margin dark ; a large discal spot (confluent with a patch in cell behind fold) ; some basal spots ; three irregular transverse series, all heavily developed and more or less confluent in abdominal region, the middle one (postmedian) complete in the type, the rest irregularly broken into smaller spots anteriorly ; some small subterminal spots ; terminal spots confluent into a highly irregular, very narrow band.

Underside similar.

Habitat.—Slopes of Mount Korintji, August-September, 1921, 2 ♀ ♀ .

Probably very variable, especially on the hind wing.

48. *Metabraxas phidola* sp. nov.

♂, 64—73 mm.

Head and body coloured almost as in the type species, *clerica* Butl., the abdomen rather more brightly mixed with ochreous. Antenna as in *clerica*, with the branches short, surmounted with fascicles of cilia. Hind legs much as in *clerica*.

Fore wing with SC^2 shortly stalked with SC^{3-5}, occasionally scarcely more than connate; white; extreme base (much more restrictedly than in *clerica*) marked with ochreous; extreme costal edge black; markings black; a triangle of dots at and close to base; a larger spot in base of cell, partially confluent with a smaller one in front of it; a small spot between this and a thin, very oblique mark which runs from hindmargin close to base, to SM^2 at 4 mm.; irregular, subtriangular or trapezoidal costal spots at about a quarter and one-third, entering the cell, succeeded by or connected with black marks about M; a rather large roundish cell-spot; two costal spots beyond it, accompanied by (often confluent with) spots respectively on and behind R^1, the first representing the beginning of the postmedian, which, if developed, would be angled outward at or just behind R^1, but which is only further represented by a series of small vein-dots, slightly incurved behind middle; small interneural spots or dots in cellules 5 and 4 behind the next spot; a row of interneural subterminal spots, the costal long, the next four large, the sixth small, the others minute; a double marginal series, the distal small, interneural, the proximal neural, often larger, confluent anteriorly, separate on medians, wanting on SM^2; fringe black, with white patches at M^2, fold and SM^2.

Hind wing white, with minute cell-dot, less minute postmedian series on R^1, R^3, M^1, M^2, and SM^2 and moderate subterminal and double terminal series of approximately equal sizes; fringe chequered.

Underside similar.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, twelve ♂♂, including the type; North Korintji Valley, 5,000 feet, September-October, 1921, one ♂.

Probably in reality closer to *clerica* than is suggested by the great reduction of the black maculation; *coryneta* Swinh., referred by Hampson to *Perenia*, also belongs to this genus.

49. *Perenia foraria* Guen. **terminata** Prout subsp. nov.

♂, 53—56 mm.

Differs from the Indian race *foraria* in having the cell-spots and terminal spots on an average larger, the fore wing beneath with a blackish terminal suffusion from costa to M^1 or even to M^2, more or less absorbing the anterior subterminal spots, and in having the midcostal spot of hind wing enlarged, on the underside measuring about 3 mm. along the costal margin.

Habitat.—North Korintji Valley, September-October, 1921, type ♂ and two paratypes; slopes of Mount Korintji, August-September, 1921, one ♂.

50. *Dilophodes* **xanthura** sp. nov.

♂, ♀, 50—60 mm.

Antennal ciliation of ♂ not, as in *elegans* Butl., pedicellate. Abdomen rather whiter than in that species, but with the anal tuft conspicuously differentiated in colour, in the ♂ pale buff, in the ♀ bright ochre-yellow. Hind tibia of ♂ enormously dilated, as in *pavida* Bastelb., the pencils partly ochreous, partly dark-grey.

Fore wing with SC^1 arising either from cell or connate or short-stalked with C, anastomosing rather strongly with C and occasionally also slightly with SC^2; white with black maculation, arranged much as in the least heavily spotted examples of *elegans*; the mark on M at origin of M^2 never confluent with the cell-spot; the white band between postmedian and subterminal rows of spots broad, except at costa; subterminals anteriorly broken into pairs (the proximal on the veins, with the three radial generally well separate, the distal interneural, but more confluent), posteriorly variable, but generally reduced as compared with *elegans*.

Hind wing with the cell-spot nearly always wanting (in one or two examples vestigial), all the dots of proximal part minute or wanting; subterminal blotches reduced to incomplete double row of small spots (variable).

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, forty-three ♂♂, forty ♀♀, including type ♂ and allotype ♀; North Korintji Valley, 5,000 feet, September-October, 1921, eleven ♂♂, nine ♀♀.

DESCRIPTIONS OF SOME INDO-AUSTRALIAN NOCTUIDAE.

BY MISS A. E. PROUT.

COLLECTED FOR MR. J. J. JOICEY BY MESSRS. C., F., AND J. PRATT, IN THE MOUNTAINS OF SUMATRA.

(*Continued from* THE BULLETIN OF THE HILL MUSEUM, Vol. II, Pt. 1, p. 74.)

EUTELINAE.

19. *Eutelia* **glauca** sp. nov.

♂, 30 mm.

Thorax and fore wing above pale tea-green (Ridgway, pl. xlvii), the collar dark brown, a few scattered dark scales on patagia and tegulae (especially at tips of tegulae). Fore wing marked somewhat as in *chalybsa* Hmpsn., "Ill. Het," B.M., vii, p. 80, pl. cxlvi, fig. 1 (1891) (Nilgiris), but antemedial line more evenly curved from costa to SM^2, without the thickening at hindmargin; medial line dark and distinct; reniform narrower than in most *chalybsa* specimens; inner postmedial line dark and distinct, angled inwards to behind proximal side of reniform in fold and distinctly angled outward on SM^2; brown streaks between postmedial and subterminal lines *behind* R^1 and *on* R^3, M^1, M^2 and SM^2; dark lunules on the subterminal in the interspaces behind R^3.

Hind wing somewhat as in *chalybsa*, but the termen and fringe tinged with green.

Underside largely suffused and irrorated with fuscous-drab, the costa and hindmargin of fore wing and termen of both wings tinged with pale green; both wings with diffused discal spot and broadly diffused double postmedial and subterminal lines; hind wing showing also a medial line.

Habitat.—Barisan Range, western slopes, 2,500 feet, October-November, 1921, one ♂.

Notwithstanding some discolorment on the proximal half of fore wing, this very distinct little insect is in good condition and the species should be quite unmistakable, even from a single specimen. The antennal ciliation is perhaps a trifle shorter than in *calybsa*.

20. *Anuga multiplicans* Wlkr. **elegans** subsp. nov.

♂, 48—54 mm.

In addition to the larger size, subspecies *elegans* differs from typical *multiplicans*, Piada *multiplicans* Walk., Spec. Lep. Ins., xv, p. 1747 (1858), from India, in the rather more vinaceous-grey ground-colour of fore wing; the more distinctly cinnamon tinge on the reniform, which has a thicker black line on its proximal edge; in the more conspicuous pale buff line near tornus of fore wing, and, on the hind wing, in the enlargement of the white and buff tornal pale patch, which extends to R^2 and is entirely uninterrupted except by one or two slight terminal black spots and occasionally by slight dark streaks in the interspaces between R^2 and M^2.

Wings beneath (especially the hind wing) rather paler and more sharply marked than in typical *multiplicans*, with the tornal pale mark somewhat larger.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, six ♂♂; Barisan Range, western slopes, 2,500 feet, October-November, 1921, nine ♂♂.

21. *Anuga* **brevis** sp. nov.

♂, 32 mm.

Section 1 of Cat. Lep. Phal. xi.

Differs from *A. lunulata* Moore, P.Z.S., 1867, p. 62 (Sikkim), in the slightly shorter and less crenulate fore wing, the greyer ground-colour of fore wing and the much less heavily darkened distal area on both wings.

On the fore wing the antemedial line is sharply defined, more as in *japonica* Leech, P.Z.S., 1889, p. 538, pl. 52, fig. 6 (Japan), but appears more highly dentate than in that species; other markings also more as in *japonica* than in *lunulata*, but there is no trace of the black spots *before* termen—only brown lunules *at* termen, which are quite as strong at tornus as at costa; the proximal and distal black edges of the erect reniform are slightly thickened and there is a small thickening in fold on the inner (black) postmedial line.

Proximal half of hind wing quite pale; the distal half pale fuscous drab, interrupted by minute pale yellow and black subterminal teeth on the veins and a larger, more distinct pale tooth behind M^2; traces of slighter pale postmedial dots on the veins and slight medial and postmedial pale marks at hind margin.

Underside somewhat as in *lunulata* but paler, the postmedial line more continuous, hardly double.

Habitat.—Barisan Range, western slopes, 2,500 feet, October, November, 1921, one ♂.

In the absence of the ♀, it is impossible to say whether *brevis* belongs with *lunulata* or with *japonica*. In some points it seems nearer to the latter species, which is unfortunately not before me for comparison; but in addition to the much larger size of *japonica* and several minor differences in colour and markings (as described in Cat. Lep. Phal.), the wide geographical removal of the two species renders it extremely improbable that they can be identical.

22. *Paectes* **euphiles** sp. nov.

♂ ♀, 27—30 mm.

♂. Antenna somewhat as in *P. cristatrix* Guen., Spec. Gén. Lép. vi, p. 313, pl. 14, fig. 10 (1852) (Java), but apparently pectinate to nearly three-quarters (tip of shaft broken), the pectinations rather shorter, especially on outer side. Coloration somewhat as in *cristatrix*, but brighter, cleaner, the olive-grey shades of *cristatrix*, on costa and beyond ante- and postmedial lines, replaced by clear olive, the pink brighter; the pink shade present chiefly beyond subterminal line (reaching almost to termen on posterior half) and proximally and anteriorly to the postmedial crescent, but leaving a creamy-white area before the subterminal line; antemedial black line rather more curved than in *cristatrix*; postmedial much more strongly curved, reaching to well behind R^2 at subterminal line, from whence it is anteriorly curved to middle of wing at M and almost erect to hindmargin; a brown patch in fold between postmedial line and subterminal, which is almost as black and well-defined as the postmedial.

Hind wing rather more broadly darkened distad than in *cristatrix*. Fore wing *beneath* fuscous, paler on proximal half, the area enclosed by the long distal curve of the postmedial (as above) reddish, the apex slightly reddened; hind wing with fuscous discal lunule, medial and double postmedial lines (the latter strongly crenulate), and with fuscous subterminal shade, the whole terminal area somewhat darkened, a slight rufous flush on anterior and distal areas.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, one ♂. Also in the Joicey Collection from Lebong Tandai, Benkoelen, June, 1922 (C. J. Brooks), one ♀, and from Bidi, Sarawak, 1907-8 (C. J. Brooks), one ♀.

A very distinct and handsome insect.

STICTOPTERINAE.

23. *Odontodes aleuca* subfusca subsp. nov.

♂ ♀, 40—45 mm.

Intermediate between *aleuca aleuca* Gn. Spec. Gén. Lép. vii, p. 51, 1852 ("E. India"), and *aleuca seranensis* A. E. Prout, BULL. HILL MUS., i, p. 205, 1922 (Cent. Ceram).

Fore wing much as in typical *aleuca*, but usually little contrasted and with the markings indistinct; three specimens have the medial line dark and strong; one ♀ has the termen (except at apex) and the hindmargin broadly suffused with whitish.

Hind wing with the fringe deeper yellow than in *aleuca aleuca* and shaded with fuscous at apex; the interspaces darkened almost as in supspecies *seranensis*.

Wings beneath somewhat more smoky than in typical *aleuca*; less so than in var. *seranensis*; hind wing with the discal spot generally larger than in the type-form, the postmedial line stronger (though without the distal pale outline of var. *seranensis*), the terminal band averaging slightly broader than in typical *aleuca* and of nearly even breadth throughout, not conspicuously narrower at tornus as in the type-form.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, one ♂, two ♀ ♀; slopes of Mount Korintji, 7,500 feet, August-September, 1921, one ♀ (ab. with termen and hindmargin pale). I have also before me a ♂ (apparently belonging here) from Sungei Ujung (Burnford) and two ♂ ♂ and four ♀ ♀ sent over by the Raffles Museum, one ♀ being from Selangor; Bukit Kutu, April, 1915; the other five specimens from Kedah Peak, 3,200 feet, December, 1915.

24. *Odontodes* **eugramma** sp. nov.

♀, 45 mm.

Palpus, head and thorax bistre (Ridgway, pl. xxix) ; abdomen fuscous-drab above, paler beneath. Fore wing fawn colour (l.c., xl) shaded beyond postmedial line with bistre and (near tornus) with russet, a band of rich chestnut-brown proximally to the very oblique median line, reaching from costa to SM^2, the area behind SM, from base to postmedial line, very pale grey-green ; pale, slightly waved subbasal and antemedial lines from costa to the grey-green area, proximally edged by a diffused darker line and distally by a slighter, finer line, the subbasal from about 1 mm. costa to 1½ on SM^2, antemedial from about 3 mm. costa to 4 on SM^2 ; a waved, pale, distally black-edged line on proximal side of the medial dark band, from costa close to antemedial line to SM^2 at about 6½ mm. from base ; medial line nearly white, from costa at about 6 mm., minutely dentate distad on SC, strongly bent outward behind M^1 to about 10 mm. from base, thence inwardly oblique (but waved) to SM^2 at about 8½ mm. ; a buff shade in cell between medial line and reniform, which is eight-shaped, very oblique, centrally dusted and outwardly ringed with fuscous ; postmedial line starting at about 8½ mm. costa (before reniform) as an oblique, double dark bar (the distal line diffused), bent outward along SC to about 14 mm. (alternately pale and dark), thence pale, finely dentate and nearly erect to M^3, almost straight and oblique (with double dark outline) to before SM^2, where it is distally dentate, bent outward to hindmargin at about 10½ mm., pale teeth on SC^4 and SC^5 and a pale shade in fold on distal side ; subterminal only indicated by dentate dark marks in the interspaces between SC^5 and R^2 (with slighter ones before SC^5 and behind R^2) and by a series of small pale spots between the veins, the only conspicuous one adjoining the dentate mark behind R^1 ; pale and dark terminal lunules.

Hind wing fuscous, the veins and hindmargin tinged with yellow, fringe golden-yellow except on tornal third. Underside dark drab ; fore wing with a large spot proximally to the discal spot and the hindmarginal area yellow ; fringe of hind wing golden-yellow almost to tornus ; discal spots weak ; postmedial line just distinguishable on fore wing, more distinct on hind wing.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, one ♀.

The British Museum has received a series of this species from Malaya, which seem to agree perfectly with the Sumatran ♀.

25. *Lophoptera* **obliquilinea** sp. nov.

♀, 37 mm.

Head, thorax, abdomen above, pectus and legs fuscous-brown glossed with purple; abdomen beneath buff mixed with fuscous-brown.

Fore wing pale purple-drab (Ridgway, pl. xlv) glossed with vinaceous-lilac (l.c., pl. xliv) and largely suffused with chestnut (l.c., pl. xiv), the paler shades persisting chiefly about termen, in fold and at hindmargin; a brighter, more russet shade (l.c., pl. xv) proximally to anterior half of postmedial line and on anterior proximal fourth of wing; a thread-like whitish subbasal line from costa to M, slightly broadened at the veins; antemedial line yellowish-white and strongly oblique from one-fourth costa to M, where it is somewhat angled, more erect and darkened from M to about three-sevenths hindmargin, where it nearly joins an indistinct dark medial line, which is angled outward in fold; anterior third of wing strongly darkened from antemedial to near postmedial line; reniform indistinct, lunular, with diffused dark outline and streak at middle; postmedial line greenish-buff, narrow and somewhat indistinct, roughly parallel with termen but sinuous, weakly angled inward behind R^1, at M^2 and at SM^2; subterminal obsolescent; terminal markings weak; fringe tipped with deep buff.

Hind wing deep fuscous-brown, with the interspaces somewhat semi-hyaline about middle of wing and near base.

Underside of fore wing shining fuscous-brown, of hind wing nearly as above; both wings with very faint indications of a postmedial line.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♀.

A very distinct species. Should possibly be placed near to *pustulifera* Wlkr., *Journ. Linn. Soc. Zool.*, vii, p. 165, 1864 (Sarawak).

SARROTHRIPINAE.

26. *Sarrothripus kebea* Beth.-Bak. **lichenaria** subsp. nov.

♂, 28—34 mm.

Posterior half of fore wing uniformly clouded with pale purplish-grey; antemedial black teeth longer than in typical *kebea* Beth.-Bak., *Nov. Zool.*, xiii, p. 225 (1906), (British New Guinea), the third tooth being coalescent with the medial line, forming a black patch near middle of wing; the angular pale spot beyond postmedial line much narrower than in typical *kebea*; a more distinct black spot in fold proximally to the subterminal line.

Hind wing above with the terminal shade broader, more diffused than in the type-form. Hind wing beneath with a broad pale striga from the apex.

♀, 31—35 mm.

Coloration more variable than in the ♂, but always a good deal paler; the proximal half of wing and the termen always whitish or only slightly shaded with purplish-grey; the blackish shading (when present at all) confined to a patch around and before the reniform. Hind wing much as in the ♂.

As the New Guinea ♀ is unknown to me it is impossible to compare it with that of subspecies *lichenaria*; the ♀ from Ceram is even paler than the Sumatra ♀.

Habitat.—Slopes of Mount Korintji, 7,500 feet, August-September, 1921, nine ♂♂, ten ♀♀; North Korintji Valley, 5,000 feet, September-October, 1921, one ♀.

27. *Risoba* **calainodes** sp. nov.

♂, 38 mm.

Bears a close superficial resemblance to *calaina* Zerny, *Ann. Nat. Hormos.* Wien., xxx, p. 190 (1916) (Pahang), to which must be sunk *obliqua* A. E. Prout, *Ann. Mag. Nat. Hist.* (9), viii, p. 9 (1921) (Sarawak); when *obliqua* was described Dr. Zerny's paper was unfortunately not before me. *Calainodes* differs from *calaina* in the following points: In *calainodes* segment 3 of palpus appears fractionally longer, the termen of fore wing slightly more erect; the green shade on fore wing extends to the costa and almost covers the postmedial area, the white tone only persisting at base, at hindmargin about postmedial line and (very slightly) on the lines, in cell and in a dot behind the oblique apical bar; in *calainodes* the green patch on posterior half of wing from near base to middle of wing emits a broad bar to base of costa, leaving hardly any pale basal shade before M; the orbicular is a black dot (not a dark ring), the reniform is slightly more rectangular than in *calaina*, with a well-defined blackish spot in its centre; postmedial line more oblique at costa, less strongly dentate opposite cell; subterminal line rather more erect at costa; apex and area between postmedial and subterminal lines rather more evenly darkened.

Hind wing slightly more tinged with buff than in *calaina*, the terminal dark band not distinctly broadened at costa, fringe green chequered with brown; *calainodes* differs beneath in having both wings more tinged with buff, with the fringes green; the green shade deeper than in the apical patch of *calaina*, extending on the fore wing well proximad to the origin of postmedial line and along termen to about R^2; a similar shade is also present at distal half of costa of hind wing, reaching to SC^5 and extended proximally almost to the division of C, SC; terminal band differing from *calaina* as on the upperside.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, two ♂ ♂.

ACONTIANAE.

28. *Tyana* **carneicilia** sp. nov.

♂, 44 mm.; ♀, 35 mm.

Although in many points nearly resembling *flavitegulae* Roths., *Journ. Fed. Malay St. Mus.*, viii, p. 118 (1920) (S.W. Sumatra), of which a series was received in the Pratt Collections, *carneicilia* appears quite a distinct species. In the ♂ the hind wing is even shorter (more curtailed at apex) than in *flavitegulae* and the costa of fore wing appears even more highly arched; judging from the single ♂ and ♀ before me, there appears to be a greater discrepancy in size between the two sexes in *carneicilia* than in *flavitegulae*. Head and patagia chocolate-brown (not yellow), matching costa of fore wing, which lacks the conspicuous white dot at base; in the ♂ the fringe is shaded with pale chocolate; both ♂ and ♀ show obliquely-set, confluent brown spots about lower angle of cell, in the ♂ very pale chocolate, at angle and in fold, in the ♀ deeper chocolate, just before and behind angle. Coloration of wings, thorax and abdomen about as in other *Tyana* species.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂, one ♀.

29. *Carea* **aetha** sp. nov.

Belongs to Section IV A of Cat. Lep. Phal., xi.

♂, 41—46 mm.

Head and thorax fiery-red with a few pale yellow scales intermixed; palpus yellowish-white beneath, pinkish above; abdomen greyish-ochraceous, dorsally tinged with red and ventrally with brown; anal tuft yellowish; first abdominal crest white; pectus and legs yellowish-white, the legs more or less shaded with reddish.

Fore wing deep venetian-red, irrorated (especially distally) with black; a slight black cell-spot; oblique, rather diffused, blackish antemedial and postmedial line, the former from two-sevenths costa to middle of hindmargin, the latter from four-sevenths costa to anal angle; traces of very slight, waved subterminal shade; fringe red-brown.

Hind wing orange-red, paler at base and along abdominal margin but without any distinct brownish area.

Underside of fore wing dull-red, with the usual apical shade and posterior pale area. Hind wing beneath yellowish-white, anteriorly and distally shaded with dull-pink.

♀, 40—42 mm.

Fore wing rather deeper in tone than the ♂, with fringe pure white except at about R^3. Hind wing slightly produced from about R^3 to M^1, the red deeper in tone than in the ♂, distally tinged with purple, the fringe tipped and chequered with white. Wings beneath distally rather more darkened than in the ♂. In spite of differences this appears to me to be the ♀ of *aetha*.

Habitat.—Barisan Range, western slopes, 2,500 feet, October-November, 1921, ♂ holotype; North Korintji Valley, 5,000 feet, September-October, 1921, two ♀ ♀. I have also before me a ♂ from Kedah Peak, 3,200 feet, December, 1915, and two ♂ ♂ from Negri Sembilan; Gunong Angsi, 2,000-2,700 feet, April, 1918, sent to us by the Raffles Museum, one of which has been courteously presented to Joicey Collection.

The Malayan specimens seem rather less deeply coloured and scarcely show the white abdominal crest, but as their condition is not first-rate it is impossible to judge whether these differences are racial.

30. *Tortriciforma* perviridis sp. nov.

♂, 27—28 mm.

Palpus with segment 3 fully as long as 2—much longer than in *viridipuncta*, Hmpsn., "Moths of India," ii, p. 425 (1894) (Sikkim); fore wing with the terminal "hook" at vein R^1 perhaps slightly smaller; appears otherwise to agree well in structure.

Head, thorax and fore wing shining javel-green (Ridgway, pl. v), the fore wing with slight pale postmedial and subterminal lines, edged with dark-brown, and some dark-brown dentate markings; a slight reddish mark on base of M; a slight oblique subbasal bar from costa to middle of fold; an antemedial dark patch on costa at about 3 mm.; a large star-like marking in fold at about 4 to 6 mm. from base; an oblique postmedial dark bar near middle of costa; an irregular dark marking beyond cell at about 7 to 9 mm. from base; another dark patch from SM^2 to hindmargin at about 6 to 8 mm. from base; the pale postmedial line, which runs on the distal edge of these markings, is angled inward in cell and fold and outward at about SC^5, R^3 and SM^2; dentate dark markings on the pale subterminal line at R^2 and in middle of fold, with traces of a dark line uniting and continuing them; a row of terminal black dots.

Hind wing whitish, suffused except at base and costa with fuscous-drab. Abdomen above pale fuscous-drab with whitish hair at base. Fore wing beneath pale salmon-buff (Ridgway, pl. xiv.), irrorated at costa and termen with fuscous, with whitish subterminal points behind SC^3, SC^4 and SC^5, the costa and fringe yellow; hind wing white, the costa (to SC) and anterior half of termen irrorated with fuscous-drab.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, three ♂ ♂; North Korintji Valley, 5,000 feet, September-October one ♂.

CATOCALINAE.

31. *Ulothrichopus* sumatrensis sp. nov.

Section I B of Cat. Lep. Phal., xii.

♂, ♀, 61—70 mm.

Head, body and legs much as in *U. rama*, *Catocala rama* Moore, Lep. Ceyl., iii, p. 128, pl. 160, f. 6 (1885) (Ceylon).

Fore wing pale vinaceous-drab (Ridgway, pl. xlv) irrorated with black; somewhat more uniform in tone than *rama* (especially in the ♂); markings nearly as in *rama*, but less well-defined, the pale spot behind the cell often obsolescent, never well-developed; postmedial line with the teeth before and behind R^2 lengthened into black dashes, the latter being especially produced and narrowed to a mere streak.

Coloration of hind wing as in *rama*, but the medial band and proximal edge of terminal band more or less outwardly oblique to R^3, thence bent inwards, less evenly curved than in *rama*.

Fore wing beneath with the antemedial dark patch very slight, and the wing between this and the medial band pure white, not yellowish-white as in *rama*. Hind wing beneath with a well-developed discal spot (absent in *rama*) and with the anterior half of the terminal band somewhat paler than in *rama*, almost shading off into the costal dark irroration, which, in *sumatrensis*, is much more extended than in *rama*, reaching to near middle of wing; medial band nearly as above; the yellow shades on both wings somewhat reduced and paler than in *rama*.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, eighteen ♂ ♂, eleven ♀ ♀; North Korinjti Valley, 5,000 feet, September-October, 1921, four ♂ ♂, two ♀ ♀; Danan Bento Morass, foot of Korintji Peak, 5,000 feet, August, 1921, nine ♂ ♂, six ♀ ♀.

Nearest to *U. rama* Moore, of which *sumatrensis* may possibly be merely a local race.

32. *Parallelia* **korintjiensis** sp. nov.

♂, ♀, 53—59 mm.

Closely related to *maturata* Wlkr., Spec. Lep. Ins., xiv, p. 1382 (1858) (Penang), and *acuta* Moore, *Proc. Zool. Soc.*, 1883, p. 27, pl. vi, f. 5 (Khasias). Differs from *maturata* in the more pinkish tone of colour (this applies especially to Indian *maturata*, subsp. *falcata* Moore), in the more darkened basal area of fore wing and the more oblique antemedial line; this line varies slightly in *korintjiensis*, but it is always distinctly curved outward to the hindmargin; the apical dark marking is larger than in *maturata* (more downcurved from the apex); the subterminal line shows one or two pale greenish-yellow teeth before the hindmargin which are wanting in *maturata*; on the termen there are more distinct black and white interneural dots; *korintjiensis* usually differs also in having the medial line bent outward to costa, but in the ♂ type this line is more as in *maturata*; *acuta* is unfortunately not before me for comparison, but in *korintjiensis* there seems no trace of the tuft of white-tipped scales at base of SM^2 on fore wing (mentioned by Hampson in his description); the medial line is not "inwardly oblique" except behind costa and has no distinct "Band" of purple-white suffusion on its proximal side; the basal area does not seem to be distinctly darkened in *acuta*, as it is in *korintjiensis*. In the figure of *acuta* the antemedial line is much more erect than in *korintjiensis* but Hampson in his description calls this line oblique.

Habitat.—North Korintji Valley, September-October, 5,000 feet, three ♂ ♂ ; slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♀.

This is quite possibly the Sumatra race of *P. acuta*.

OPHIDERINAE.

33. *Sypna* **expressa** sp. nov.

♂, ♀, 46—49 mm.

♂ antenna bipectinate, with moderate branches, the apical fourth almost simple. Head and thorax buff shaded with vinaceous-drab (Ridgway, pl. xlv).

Fore wing fuscous-purple, the postmedial area paler, more buff, in three of the five specimens with a large whitish patch from costa to M and M^1; general aspect and markings much as in *lucilla* Btlr., *Trans. Ent. Soc.*, 1881, p. 206 (Sikkim), but the more contrasted dark and pale shades of *expressa* (especially in specimens with the white patch), together with the pale hind wing, make it appear much more strongly marked than *lucilla*; lines nearly as in *lucilla*, but the antemedial rather nearer the base (more remote from the medial); orbicular a little larger than in *lucilla*; reniform even more indistinct, except for a black bar (on the medial line) defining its proximal edge; where present, the postmedial white patch reaches from the medial to the postmedial line.

Hind wing much paler than in *lucilla*, whitish-buff with a weak medial and stronger subterminal shade, the latter well removed from termen, leaving the termen pale from apex to behind R^2 and with a pale spot before tornus; veins R^3, M^1 and M^2 streaked with fuscous; a fuscous shade about SM^2 and double dark postmedial bars before hind-margin continued as a slight shade to about R^3; some brownish-drab hair in fold.

Underside nearly as in *lucilla*, the medial and postmedial shades on fore wing rather more excurved, leaving a distinct, detached discal dot; hind wing with the medial and postmedial lines rather further apart, the subterminal shade usually weaker than in *lucilla*.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, two ♂♂, one ♀; slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂, one ♀.

34. *Sypna achaeopsis* A. E. Prout **microdesma** subsp. nov.

♂, ♀ 48—57 mm.

Differs from typical *achaeopsis*, BULL. HILL MUS., i, p. 230 (1922) (Cent. Ceram), chiefly in the somewhat darker coloration of both wings; on the fore wing the termen is usually as dark as the subbasal band; this applies to the aberration corresponding to ab. *rhodozona* of the typical subspecies (in which, however, the pinkish-white is replaced by greenish-white) as well as to the more typical forms; in this ab. and in a lesser degree in all forms the distal swelling at posterior end of the subbasal band is separated by a paler line from the band itself in subsp. *microdesma*, in the typical form the two form one solid band; the costal dark shade on the distal edge of postmedial line is nearly always more broadened in subsp. *microdesma* than in typical *achaeopsis*; the postmedial dark mark in fold is, on the other hand, never well developed.

On the hind wing the medial pale band is much reduced, occasionally almost obsolete, the pale mark at apex hardly extends on to the wing, and there is hardly any pale shading at the middle of termen; the subterminal line is fine but distinct from about (or before) R^2 to tornus.

On the underside the subterminal dark shading is typically narrower and less strong in subsp. *microdesma* than in *achaeopsis achaeopsis*.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, one ♂, six ♀♀; slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂, six ♀♀; Barisan Range, western slopes, 2,500 feet, October-November, 1921, one ♂, one ♀.

35. *Sypna* **leucosticta** sp. nov.

♂, ♀ 60—65 mm.

Antenna somewhat as in *buruensis*, A. E. Prout, *Entomologist* (London), lix, p. 74 (1926) (W. Buru), but rather more closely lamellate, without distinct bristles but with longer fascicles of cilia. Ground-colour about as in *buruensis*.

Markings of fore wing somewhat as in *albilinea* Wlkr., Spec. Lep. Ins., xiv, p. 1261 (1858) (Silhet), but the antemedial line less angled outwards in the cell, leaving the antemedial dark band more uniform in breadth ; antemedial and medial lines rather less inwardly oblique towards hindmargin ; postmedial and subterminal lines better defined than in *albilinea*, the former triple, the latter with the costal dark bar replaced by two black teeth preceded by a strong dark shade and a narrow pale rufous bar ; orbicular typically a small white spot ; reniform typically a round white spot surrounded (except distally) by white dots ; in two ♀ ♀ the orbicular and reniform are reddish orange, the latter very vague ; two specimens have more or less well-defined bluish-white ante- and postmedial bands ; in a third the white is extended over most of the medial area ; the terminal dots are usually larger, whiter and more outstanding on both wings than in *albilinea* ; pale spots on fringe of hind wing much as in *albilinea*, but in *leucosticta* the pale spot before tornus is wanting.

Underside much as in *albilinea*.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, three ♂ ♂, nine ♀ ♀ ; slopes of Mount Korintji 7,200 feet, August-September, one ♂, five ♀ ♀.

This may be no more than a local race of *albilinea*, but the genus *Sypna* contains so many closely-related forms that it is at present very difficult to define their correct status as species, subspecies or aberration.

36. *Sypna* **spodix** sp. nov.

♀, 62—65 mm.

Head, palpus, antenna and patagia ochraceous-tawny (Ridgway, pl. xv) ; thorax and fore wing russet (pl. xv) inclining towards auburn (pl. ii) ; hind wing warm buff (pl. xv), largely suffused with dark drab ; abdomen, pectus and legs predominantly fuscous, the hair on the legs tinged with ochraceous.

Fore wing almost uniform russet with a few scattered white scales, except for a broad, slightly curved band between postmedial and subterminal lines, which is auburn (pl. ii) in the type, but in the other specimen is pale violet-grey (pl. lii). In the type the postmedial line is represented by white spots proximally to the dark band, before R^3 and in the fold, and by white points on the costa and behind SC^4 and SC^5 ; in the other ♀ these spots are pale violet-grey ; a row of small, interneural auburn and white spots just before termen ; fringe with a fine pale line at base.

Hind wing with a patch of the pale ground-colour at and before termen from costa to R^3, only interrupted by rather large interneural black spots just before the termen; fringe almost uniformly tinged with ochraceous, though slightly darkened on posterior half of termen and proximally pale about the fold; the drab suffusion darkest towards termen; interrupted by a diffused slightly paler postmedial shade; the black terminal spots edged with white on posterior half of wing.

Underside typical of the genus.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, two ♀ ♀.

Distinguished from all other *Sypna* species known to me by the very unusual tone of colour.

37. *Idicara* **lobata** sp. nov.

♂, 44 mm.

Structure nearly as in *Cataphia thricophora* Hmpsn., "Moths of India," ii, p. 483 (1894) (Burmah), which is sunk by Hampson to *Idicara olivacea* Wlkr., *Journ. Linn. Soc.*, vii, p. 172 (1867) (Sarawak); the type of *olivacea* is unfortunately not before me for comparison. *Lobata* differs, however, from *thricophora* in the broader and apparently more roughly scaled fore wing, with strongly rounded hindmargin, and especially in having a distinct lobe at tornus of hind wing, with a scar running from it to M between M^1 and M^2, the distal half of M^2 being strongly curved.

Fore wing coloured somewhat as in *thricophora*, but more strongly suffused with fuscous; basal area (except towards costa) and a small patch at costa near apex flesh-pink; reniform green, surrounded except on proximal side by minute white dots, with a green bar running from the middle of its distal edge to the postmedial line; orbicular greenish; the wing slightly variegated in other parts with pink and greenish, especially about the antemedial line and the termen; lines much as in *thricophora*, the postmedial with a strong, diffused fuscous shade on its distal side, the subterminal with proximal black teeth behind SC^5 and R^4 and a broad bar on R^3, extending to the postmedial line; broad, blackish, horizontal bars on the pink basal shade behind M and SM^2.

Hind wing somewhat as in *thricophora*, but the proximal edge of terminal dark band is cut into at the scar between M^1 and M^2, instead of being evenly curved.

Fore wing beneath whiter than in *thricophora* except on anterior third, with the lines weaker; hind wing with the dark line nearer termen, strongly bent outward behind C, excurved behind the cell and interrupted at the scar, a dark patch beyond it about the radials.

Habitat.—Barisan Range, western slopes, S.W. Sumatra, 2,500 feet, October-November, 1921, one ♂.

Hampson places *olivacea* (= *thricophora*) in the middle of his genus *Catephia*, but it seems to me to belong to a separate genus. In any case it forms a very distinct section, with long abdomen, immense anal tuft and large lateral tufts from base of abdomen; pectus densely hairy. The genus (or subgenus) *Idicara* may be sectionized by the lobe and scar on hind wing.

(*To be continued.*)

THREE NEW FORMS OF DELIAS.

By G. TALBOT.

1. *Delias kummeri* Jord. form **similis** f. nov.

The forms *ligata* R. and J. and *kummeri* Jord., are peculiar in several ways. They occur together. They only appear to differ in that one has a continuous red line on the hind wing below, and the other has this line absent from the white area of the wing. Except for this characteristic they are alike not only in British New Guinea but also in Dutch New Guinea where these forms are racially different. Again we find that the scent-scale is different in both, as well as the form of the valve. The difference in the scent-scale is perhaps specific because even in local forms such differences have not been found. Two specimens of *kummeri* from the Arfak (the only ones we know from there) resemble the *ligata* race of the Weylands instead of the race from the Arfak, and are the same as Weylands *kummeri*. We can hardly consider *kummeri* as an individual aberration, and must therefore treat it as a species. It is evidently derived from *ligata* and some interbreeding may take place between the two though not to any extent. Some specimens of *ligata* show a broken red line on the hind wing, forming an intermediate condition between the two forms. These specimens possess scales of the *ligata* type. It may be assumed that the two species on the same ground will sometimes cross and produce intermediate types of pattern whilst maintaining each its own type of scent-scale, one such type being associated always with an invariable pattern. A natural segregation of colonies of each form would be indicated, thus avoiding any degree of indiscriminate crossing which may tend to convergence.

♂. Pattern of the hind wing below as in *kummeri kummeri*, other details as in *ligata weylandensis* J. and T.

Fore wing with the white area more extended distad than in the typical form. Hind wing below as in the typical form and with the white area less extended in cellule 2 than in *weylandensis*.

Habitat.—Angi Lakes, Arfak Mountains, 6,000 feet, January-

February; two ♂ ♂ (type); Menoo River, Weyland Mountains, 3,500-5,000 feet, December-January, one ♂; Weyland Mountains, 5,000 feet, June, one ♂.

2. *Delias aglaia* **triglites** subsp. nov.

The name *triglites* was used by Frühstorfer, but we cannot find that any description was ever published. A ♂ specimen in the Frühstorfer collection from Solok, N.E. Sumatra, is labelled type, as well as a ♀ from Battak. But Frühstorfer had published a description of the race from N.E. Sumatra under the name of *goda*. The form from West Sumatra is sufficiently different to deserve a name and it may have been this which Frühstorfer had in mind to publish.

♂. A darker form than *goda*. The submarginal spots and the discocellular spot on the fore wing above are indistinct, and are also reduced on the underside. On the hind wing below the yellow patches are smaller and those in 5 and 6 are separated into two parts. The basal red band is narrower and is much reduced below the upper margin of cell, being almost broken below the cell.

Habitat.—West Sumatra, three ♂ ♂ from the collection of H. Frühstorfer. We do not know the exact locality but this form was not found in collections made in the Korintji district.

3. *Delias sanaca* **oreas** subsp. nov.

D. belladonna var. *horsfieldi* Gray, Elwes, *Tr. Ent. Soc. Lond.*, p. 409 (part.) pl. x, fig. 3 ♀ (1888) (Sikkim).

D. sanaca perspicua Früh., Jordan, *Nov. Zool.*, xxxii, p. 282 (1925) (partim).

The female figured by Elwes (*loc. cit.*) does not agree with the ♀ figured by Frühstorfer (Seitz, ix, p. 130, 1911). A female from Yunnan in the Brit. Mus. Coll., and another from Yunnan in the Hill Museum agree much better with the figure of *perspicua*. The ♂ ♂ of *perspicua* from Yunnan are also different to those of the Sikkim form, having larger white markings and more grey dusting. In this respect they approach *subnubila*.

The present form is quite distinct in pattern from any other.

♂. Compared with *perspicua* the fore wing is darker and the markings more sharply defined. Hind wing with the spots sharply defined and without the grey suffusion seen in *perspicua* and *subnubila*.

The discal spot in cellule 4 is short and somewhat square, its proximal edge distinctly emarginate; in *perspicua* this spot is more diffuse with usually a streak of grey scaling proximally, in this respect resembling *subnubila* and *berinda boyleae*. Discal spots in 2 and 3 smaller than the one in 4.

Underside of fore wing with only slight grey basal scaling. Discal stripe in 2 not longer than the one in 3. Grey stripe in submedian area more diffuse and less defined than in *perspicua*, *subnubila* and *berinda*, and not completely divided by the submedian fold as in these forms. Hind wing with the discal spot in 4 of the same shape as above; the spot in 3 is also square.

♀. The characters described for the ♂ are more emphasized. Fore wing markings clearer white than in females of allied forms, and the cell-bar is very strongly marked. Hind wing cell-stripe white, sharply-defined, and narrower than in *subnubila*. Discal spots grey and more defined than in the ♂, and with some white edging proximally. Submarginal spots larger than in females of other forms. Underside as in the ♂.

Habitat.—Sikkim. Sinchul, 8,000 feet, 6.vii.86, H. J. Elwes (♂ Type), 6,000 feet, 6.vii.86, H. J. Elwes two ♂ ♂; 30.vi.84, O. Muller (♀ allotype), ex Coll. Elwes. Also in the Brit. Mus. from Upper Teesta River, June, 1903, five ♂ ♂; Darjeeling District, 6-8,000 feet, vii.1917, one ♀.

D. subnubila, *sanaca perspicua*, and *berinda boyleae*, so closely approximate to one another in pattern, that certain identification is only possible by examination of the uncus. The figure of this structure, given by Dr. Jordon in *Nov. Zool.*, xxxii, p. 280, will enable anyone to form an accurate determination.

The ♀ of *subnubila* may be known by the more extended white markings of the fore wing with considerable greyish scaling in the cell. The ♀ of *perspicua* has on the hind wing the discal spot in 4 incurved on its proximal edge, and in the ♀ of *boyleae* this spot is not incurved and has some grey scaling proximally of it, discal spots less sharply defined than in *perspicua*.

In a paper on the Butterflies of N. W. Yunnan (*Ann. Mag. Nat. Hist.*, ser. 9, vol. xix, p. 337, 1927), Mr. H. T. G. Watkins makes *perspicua* a race of *subnubila*. The insect described by Fruhstorfer is either *berinda boyleae* Butl., or a *sanaca* race as considered by Dr. Jordan. For the present we see no reason for not accepting Dr. Jordan's view. In the Hill Museum there is a ♂ of a *sanaca* race

(= *perspicua*) from Tsekou, and also a ♂ of *subnubila* from Tsekou, and these show by the uncus that they are abundantly distinct. We have also both forms from Yunnan.

We cannot agree with Mr. Watkins that these differences of genitalia are racial. In all other Delias, a race is not to be differentiated by its uncus, and the same should hold here.

Furthermore we utterly dissent from the view of Mr. Watkins that "To make such differences (of genitalia) the sole criterion of specific distinctness creates confusion." There was absolute confusion in the *belladonna* group until the genitalia were studied. Our experience with most of the remaining species in this large genus shows that the uncus gives a definitely specific character in that it does not vary in individuals with exactly similar pattern, though a very similar uncus may occur in a widely different species. Confirmatory evidence of a similar kind is obtained from the study of the *lamina dentata* on the bursa copulatrix of the female. In the species considered above, this structure is correlated with the ♂ structure.

The remark of Mr. Watkins quoted above is not quite correct as applied to Dr. Jordan's paper. The differences of genitalia were not "the sole criterion," as differences of pattern and scaling are also given; most important of all is the distribution, the occurrence side by side of individuals whose structural characters are not alike. These cannot be races and if they are not species what are they?

LIST OF PAPERS

Published elsewhere since Previous List.

(*Continued from the* BULLETIN, *vol. i, p.* 572.)

45. 1924.—W. Hawker-Smith. "Further Records of Lepidoptera from the Witley District of Surrey," *Ent. Record*, vol. xxxvi, No. 5, pp. 75-78.

46. 1925.—Talbot and Le Cerf. "On the Identity of some Species of Euploea with the Description of Two New Forms. (Lep. Rhopal., Danaidae)," *Encyc. Ent.* (Lepidoptera) 1, fasc. 1, pp. 37-40.

47. 1925.—A. E. Prout. "Seven Apparently New South African Noctuidae," *Entomologist*, vol. lviii, pp. 213-218.

48. 1925.—Joicey and Talbot. "Notes on some Lepidoptera with Descriptions of New Forms," *Annals and Magazine of Natural History* Series 9, vol. xvi, p. 633.

49. 1925.—A. E. Prout. "Some Malayan Noctuidae from the Raffles Museum, Singapore," *Annals and Magazine of Natural History*, Series 9, vol. xvi, pp. 395-404.

50. 1926.—A. E. Prout. "Noctuidae from Central Buru," *Entomologist*, vol. lix, pp. 62-81.

51. 1926.—P. I. Lathy. "New Species and Forms of the Genus *Euselasia* (Lep.) in the Joicey Collection," *Entomologist*, vol. lix, pp. 143-146.

52. 1926.—G. Talbot. "Two New Moths from the Belgian Congo," *Rev. Zool. Afr.*, vol. xiii, 3-4, pp. 180-181.

53. 1926.—Talbot and Hicks. "Butterfly Collecting in the Belgian Ardennes," *Entomologist's Record*, vol. xxxviii, No. 6, pp. 88-93.

54. 1926.—Joicey and Talbot. "New Forms of Lepidoptera from the Island of Sao Thomé, West Africa," *Entomologist*, vol. lix, pp. 220-226.

55. 1926.—Joicey and Talbot. "A New Nymphalid from the Congo," *Entomologist*, vol. lix, p. 248.

56. 1926.—W. Hawker-Smith. "Some new Lycaenidae in the Congo Museum," *Rev. Zool. Afr.*, vol. xiv, 2, pp. 237-241.

57. 1926.—G. Talbot. "On some Families of Heterocera Collected in Sarawak," *Sarawak Museum Journal*, vol. iii, pt. 2, No. 9, pp. 129-146.

58. 1926.—L. B. Prout. "An account of some Geometrid Moths collected in Sarawak," *Sarawak Museum Journal*, vol. iii, pt. 2, No. 9, pp. 169-210.

59. 1926.—A. E. Prout. "Noctuid Moths from some of the Mountains of Sarawak," *Sarawak Museum Journal*, vol. iii, pt. 2, No. 9, pp. 211-241.

60. 1927.—Joicey and Talbot. "Four New Butterflies from the Island of St. Principe," *Entomologist*, vol. lx, pp. 1-5.

61. 1927.—Joicey and Talbot. "New Forms of Lepidoptera Rhopalocera," *Encyc. Ent.* (*Lepidoptera*), ii, fasc. 1, pp. 1-14.

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A REVISION OF THE GENUS *PHYCIODES* Hubn. (Lepidoptera *Nymphalidae*).

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(Plates I, II, III.)

(*Supplement to* THE BULLETIN OF THE HILL MUSEUM, Vol. II.)

INTRODUCTION.

THE extensive genus *Phyciodes* has been much neglected by lepidopterists, partly, no doubt, because many of the species are small and comparatively unattractive-looking butterflies, and partly because a large number of the forms present considerable difficulties to the student. For this reason numerous errors of determination and synonymy have crept into the group, so that a complete revision has been long desirable. In preparing the following paper as a contribution towards clearing up the prevailing confusion, I have to acknowledge the valuable assistance I have received from Dr. W. J. Holland, Mr. J. J. Joicey, Dr. K. Jordan, Captain N. D. Riley, Lord Rothschild, F.R.S., Mr. G. Talbot, and many other entomologists. A special word of thanks is due to Mr. Joicey for enabling me to publish the present paper, and I am also indebted to the authorities of the British Museum of Natural History for allowing me to examine and rearrange the whole of the now very representative collection of *Phyciodes* in that institution, and to Lord Rothschild for granting similar facilities with the fine collection in the Tring Museum. It fortunately happens that the types of the great majority of the known species are in this country, and all these have been carefully examined. The genus has also been one of my favourite studies during eight collecting trips to Central and South America, covering a period of twenty-six years and embracing all the countries except Peru and Bolivia, so that I have had the advantage of observing and capturing more than half of the known forms upon the wing.

The genus *Phyciodes* was founded by Hübner in 1816, his type being *P. tharos* Drury. Boisduval, in 1836, established *Eresia*, with the type *E. eunice* Hübn. Doubleday and Westwood (1847) treated the more typical species of *Phyciodes* as a section of *Melitaea*, and retained the genus *Eresia* for the remainder, whilst Hewitson adopted the latter name for the whole genus. Kirby (1871) united all the species in *Phyciodes*, whilst most recent authors have agreed that *Eresia* affords no sound structural characters by which it can be separated from *Phyciodes* and can only be considered as a section of that genus.

Staudinger and Schatz (1888) have furthermore pointed out that the separation of *Phyciodes* from *Melitaea* is by no means a sharp one. This holds good both as regards the structure and the superficial facies of certain species (e.g., *P. elada* Hew., *P. theona* Mén. and others), which have been repeatedly shifted from one genus to the other by different authors. Roughly speaking, it may be said that the first six or seven species given in the present monograph form a connecting link between *Melitaea* and *Phyciodes*, but these lead gradually over to forms so different that their retention in *Melitaea* is impossible. A separation of the two genera is therefore justifiable on grounds of convenience, even though it is difficult to draw any strict biological line between them.

The character by which *Phyciodes* can be most easily distinguished from *Melitaea* is the terminal joint of the palpi, which in most species of *Phyciodes* is much more attenuated and almost acicular, but this character does not always hold good, as species with a stouter terminal joint occur even among the long-winged mimetic forms as, for instance, in *P. lansdorfi* Godt., whilst on the other hand certain species which approach much nearer to *Melitaea* in general aspect, such as *P. proclea* Doubl., have the acicular character of the joint in question exceptionally well marked.

The neuration is essentially that of *Melitaea*, vein 11 of the fore-wings arising before the end of the cell and vein 10 beyond it. In the form and direction of the discocellular veins there is considerable difference between certain species, and sometimes even instability amongst individuals of the same species, as I have noticed particularly in *P. eunice* Hübn. and *P. mundina* Druce. The fore legs of the male are of the usual Nymphalid pattern, slightly hairy, the femur and tibia of about equal length, the tarsus single-jointed, short, about one-third the length of the tibia. In the shape of the wings there is much greater diversity than in *Melitaea*, as will be noticed under the different groups. A deeply excavated outer margin of the fore wings is characteristic of a large number of species, and for these Scudder proposed the genus

Anthanassa, but here again the transition to the species with rounded outer margin is so complete that no hard and fast line can be drawn between them. The arrangement in the following pages is based upon the wing pattern coupled with the more obvious characters of the male genitalia. For the study of the latter a large number of preparations, representing some eighty-five species, have been made and compared. In many cases the examination of the armature has yielded only negative results, particularly, as is so often the case, amongst the mimetic species, in which a large number of forms which are undoubtedly distinct fail to show any differences except such as might be due to individual variation, but in many other cases forms whose specific distinctness had at first appeared doubtful exhibit characters which leap to the eye at once, and although it is clear that an arrangement based upon the genitalia alone would in some cases outrage obvious affinities as shown by other characters, it is nevertheless possible to recognize several distinct types of armature.

A greatly modified or atrophied uncus is highly characteristic of the genus; it is only in some four or five widely separated species that we find a well-developed uncus proper, as in the genus *Argynnis*, etc. In all the remainder the uncus is found to be represented by a mere prolongation of the tegumen. This prolongation falls into three main groups, namely, species in which it is armed with hook-like processes, those in which it is without hooks or spines, and those in which the end is spinose. The type of uncus with distinct hooks is characteristic of the *tharos* group, which contains almost exclusively North American species, and that without hooks or spines of the large and important *drusilla* group and its allies, whilst an urn-shaped uncus with small spinose lobes at the apex is found in the great majority of the long-winged mimetic species of the section *Eresia*, but occurs also in almost precisely the same form in the very different *liriope* group.

The valve or clasp preserves a tolerably constant form in the great majority of species, the normal type being of a somewhat bulbous form, considerably swollen at the middle, just beyond which a long thorn-like, highly chitinized process (clunicula) arises from the inside, this process being often nearly half the length of the valve itself; distal to this the valve is rapidly narrowed and curved ventrally, the tip furnished with one, two, or rarely three processes, which are usually small and claw-like, but in some cases are long and acicular or set at right angles. In some half a dozen species, however, chiefly those which are nearly related to *Melitaea* in pattern, the valve is nearly cylindrical, not swollen at the middle and without the thorn-like inside process, although in some species the latter is represented by a small process arising much nearer to the apex.

The saccus has either one or two projections, the single saccus being characteristic of the long-winged mimetic species and of the *liriope* group, and the double saccus of a majority of the short-winged non-mimetic species, but there are a number of exceptions in both cases.

The early stages are very little known, but in the few North American species in which they have been worked out they show close resemblance to *Melitaea*, both in the larva and pupa. The majority of the known larvae feed upon asters or other Compositae, and in Mexico I once found the pupa of *P. ardys* on a small species of Helianthus, upon which the larva had presumably fed.

The genus ranges throughout North and South America, from Canada to Argentina, but it is principally a tropical group. Out of 118 known species only 17 occur in temperate North America, and no less than 11 of these range also into the tropics, leaving only 6 non-tropical species, and even one or two of these are doubtfully distinct. In Mexico, however, we find 25 species, whilst Guatemala, a much smaller country, has 23, and Costa Rica 22. In Colombia the number increases to 32, and reaches its maximum in Ecuador with 35, falling to 27 in Peru and 22 in Bolivia, but it is rather remarkable that only a dozen species are so far known from Venezuela. Central and South Brazil have 16 species, and Paraguay and Argentina 13, but Guiana is comparatively poor with 8, the Lower Amazon still poorer with 6, whilst the Antilles (excluding Trinidad) have but 3, and from Chile no species of *Phyciodes* is yet known. The butterflies are most abundant, both in species and individuals, in mountainous districts at elevations of from 2,000 to 4,000 feet above sea level; few species are common above 6,000 feet, although I have taken occasional specimens at altitudes of over 8,000 feet in Colombia and Costa Rica.

In the colouring and pattern of the wings there is no other genus of *Nymphalidae* which shows such great diversity. As in *Melitaea*, we find a great susceptibility to geographical influences, but coupled with it there is a much greater amount of sexual dimorphism plus an additional factor not found at all in *Melitaea*, namely, the influence of mimicry. So great is the importance of the latter factor that it has led in several cases to an individual polymorphism only equalled, and certainly not surpassed, by that found in the African genus *Pseudacraea*, the same species flying in several different forms in the same localities, so that it is only recently that the relationship of some of them has been suspected. As in the structure, so also in the pattern we find a gradual transition from the *Melitaea*-like forms to the most widely different mimetic species, and this transition coincides to a large extent with their geographical distribution, the forms most nearly related to *Melitaea* being almost the only ones found in North America, the very characteristic series of groups of which, *P. drusilla* Feld., may be considered the type predominating in Central America, and the long-winged mimetic forms preponderating, at any rate in species, as we near the equator.

The species of *Phyciodes* fall naturally into two main sections, namely, the short-winged, typical *Phyciodes* and the long-winged species, which for the sake of convenience may be termed the section *Eresia*. I have failed to find any constant characters by which to justify the generic separation of the latter, which will therefore be treated as a section only, the two sections being connected by three or four intermediate species which combine the markings of the first with the shape of the second. Owing to the polymorphism of several species it has not been found practicable to construct a complete key to the genus, but it is hoped that identification may be simplified by the following:—

KEY TO GROUPS.

A. Fore wings not more than twice as long as broad.
I. A tuft of long hairs on inner margins of hind wings in the ♂ ... ... *Pelops* group.
II. No tuft of hairs on hind wings.
(*a*) Markings on underside of hind wing distinct.
† Postdiscal spots on hind wing above fulvous *Elada* group.
†† Postdiscal spots on hind wing above rufous *Theona* group.
††† Postdiscal spots on hind wing above white, small ... ... *Anomalus* group.
(*b*) Markings on underside of hind wing confused or indistinct.
(b_1) Hind wings of the ♂ with a patch of modified scales covering the whole wing except outer margin ... ... *Otanes* group.
(b_2) Hind wings of the ♂ with a patch of modified scales extending from costa to vein 4 ... *Atronia* group.
(b_3) Hind wings without modified scales.

† Both wings with three bands of fulvous spots.

° Postdiscal spots of hind wing black-centred; outer margins fulvous or yellowish below ... ... *Nycteis* group.

°° Postdiscal spots of hind wing black-centred; margins not fulvous or yellowish below ... . *Tharos* group.

†† Fore wings with three bands of tawny spots; discal and postdiscal bands of hind wing wholly fused together... ... ... *Fasciata* group.

††† Markings above bluish-white, scanty ... *Miriam* group.

†††† Margins of both wings very smooth, not sinuate ... ... *Liriope* group.

††††† Fore wings with three bands of spots, fulvous, tawny, brownish or white. Hind wing, postdiscal band linear or absent.

° Outer margin of fore wing feebly or not at all excavated below vein 4. Discal spot in 3 of fore wing placed immediately above that in 2, the former not projecting ... ... *Teletusa* group.

°° Outer margin not excavated. Discal spot in 2 of fore wing projecting more distad than the spots in 1 and 3 ... *Ianthe* group.

°°° Outer margin not excavated. Discal in 3 spot of fore wing absent or more distal than that in 2 ... ... *Abas* group.

°°°° Outer margin of fore wings excavated below vein 4 ... ... *Drusilla* group.

(The dimorphic ♀ ♀ of *P. atronia* also resemble this group.)

†††††† Discal and postdiscal bands of hind wing both linear or absent.

° Discal spots of fore wing present ... *Delphia* group.

°° Discal spots of fore wing absent or obscure. No white spot in cellule 3 of fore wing ... ... *Gaujoni* group.

††††††† Fore wings with oblique disco-subapical band; hind wings without discal band.

° Band of fore wing fulvous ... ... *Jana* group.

°° Band of fore wing white, sometimes reduced to a single postdiscal spot in 3 *Nana* group.

†††††††† Fore wings with white discal band 6-7 mm. wide at inner margin ... ... *Leucodesma* group.

B. Fore wings at least twice as long as broad.

I. Markings on hind wings beneath confused or indistinct.

† Markings above white or pale ochraceous ... *Myia* group.

†† Markings above fulvous or tawny ... *Dicoma* group.

II. Markings on hind wings beneath distinct. No black internervular rays.

(*a*) Apex of fore wings truncate ... ... *Phillyra* group.

(*b*) Apex of fore wings rounded.

(b_1) Postdiscal black stripe on underside of hind wings double ... ... *Carme* group.

(b_2) Postdiscal black stripe on underside of hind wings, when present, simple.

X. Band of hind wing above white or cream-colour. (In some forms of the dimorphic ♀ of *P. letitia* the band is pale rufous) ... *Clio* group.

Y. Band of hind wing above fulvous or yellowish. Hind wings beneath with two black basal stripes separated by a pale line ... ... *Perna* group.

Z. Basal stripe on hind wings beneath, when present, not divided by a pale line.

† Fore wings with broad red subapical band ... *Lansdorfi* group.

†† Fore wings with broad blue band ... ... *Levina* group.

††† Fore wings with white subapical band and fulvous basal patch ... ... *Emerentia* group.

†††† Markings of fore wing fulvous or yellow, or fulvous *and* yellow (the latter replaced by white in some aberrant ♀ ♀ of *P. eutropia*).

° Hind wing three black bands { *Eunice* group.
Eranites group.

°° Hind wing fulvous with only two black bands; a single macular band beyond basal patch of fore wing ... ... *Sestia* group.

(In one form of the dimorphic ♀ of *P. sestia sestia* the hind wing and basal patch of fore wing are white.)

°°° Hind wing fulvous (yellow in *P. ithomioides cissia*) with only two black bands; fore wing with *two* macular bands beyond basal patch... ... *Alsina* group.

°°°° Disc of hind wing dark red above ... *Margaretha* group.

††††† Markings above grey, straw-yellow or light rufous; hind wing without black median band ... ... *Moesta* group.

(The dimorphic ♀ ♀ of *P. letitia* mentioned above also approximate to this group.)

III. Hind wings with black intervular rays. Markings on underside distinct ... ... *Perilla* group.

SYNOPSIS OF GROUPS.

SECTION A.—*Phyciodes.*

This may be roughly termed the non-mimetic section, although a few species are not free from a suspicion of intrageneric mimicry. The wings are short and comparatively broad, except in the small transitional group represented by *P. myia* Hew. The general pattern of the markings of both wings above usually consists of three rows of spots lying beyond the discoidal cell; these may be termed the discal, postdiscal and submarginal spots respectively. In some species there is also a median series of spots placed at the bases of cellules 2-7, but as these may be present or absent in different individuals of the same species, they are of relatively little importance. This pattern persists in a greater or lesser extent throughout the whole section, although often modified by some of the spots being enlarged, reduced, absent or confluent, this last particularly on the hind wings, where the discal spots often form a solid band; it is only in the group represented by *P. liriope* Cram. that we find a radical alteration of pattern. On the undersurface the markings of the hind wings are almost invariably fine and confused, contrasting considerably with the bold, definite markings of the section *Eresia*, but here also there is a marked uniformity of pattern, a dark median line, a postdiscal series of dots, and a submarginal series of lunules being nearly always traceable. Another difference from the section *Eresia* consists in the gregarious habits of the perfect insects, which frequent open places such as prairies and the edges of fields or roadsides, where a number of specimens of the same species may often be found settled upon one plant or in patches on the ground, whereas amongst the mimetic species this is very rarely the case, even with the commonest forms.

In this section some difficulty is presented by some of the North American forms of the group, represented by *P. campestris* Behr. and its allies, some of which appear to be imperfectly separated, or incipient species like certain of the *Argynnis* and *Melitaea* of the same region, and it is only with some diffidence, and upon what appears to be most conclusive evidence, that I have ventured to reduce one or two of the species hitherto recognized by American authors to the rank of subspecies or aberrations, but I feel confident that I have erred on the right side in this respect and that one or two other supposed species will eventually be also reduced.

Another heavy problem was offered by the large group represented by *P. drusilla* Feld., *P. ardys* Hew. and their very similar allies. In this case, however, most of the difficulties have melted away after examination of a large amount of properly labelled material, assisted by observation in the field, where it has been my good fortune to meet with nearly all the known forms on the wing. Contrary to the general impression, it has been found that the species of this group, although often very much alike, are for the most part very constant, so that it is only in a few cases that their relationship must remain in doubt.

P. elada group.

Very small *Melitaea*-like forms. Fore wing rather short, outer margin rounded. Upperside with discal, postdiscal, and submarginal bands of fulvous or yellowish spots, the postdiscal spots of hind wing not black-centred. Underside of fore wing, with fulvous outer margin; hind wing with complete submarginal series of large white spots of nearly uniform size.

1. *P. dymas* Edw.
2. *P. elada* Hew.
3. *P. perse* Edw.

P. theona group.

General characters as in the preceding group, but larger forms. Fore wing broad, outer margin rounded, not fulvous beneath; markings yellow, fulvous or rufous, arranged as in the *P. elada* group, postdiscal spots of hind wing not black-centred.

4. *P. theona* Mén.
5. *P. ezra* Hew.

P. nycteis group.

General characters as in preceding group, but postdiscal spots of hind wing above with black centres; outer margin of both wings fulvous or yellowish below; submarginal spots of hind wing beneath sometimes of unequal size.

6. *P. harrissii* Scudd.
7. *P. nycteis* Doubl. and Hew.

P. tharos group.

Outer margin of fore wing rounded, slightly sinuate. Both wings above with discal, postdiscal, and submarginal series of fulvous or yellow spots, the postdiscal spots of hind wing usually with black centres. Submarginal series of spots on hind wing beneath incomplete, or if complete the lunule in 3 larger and better marked than those in 2 and 4. From the latter character the butterflies are known as "Crescent Spots" in North America.

8. *P. gorgone* Hübn.
9. *P. tharos* Drury.
10. *P. batesii* Reak.
11. *P. phaon* Edw.
12. *P. mylitta* Edw.
13. *P. montana* Behr.
14. *P. campestris* Behr.
15. *P. orseis* Edw.
16. *P. picta* Edw.
17. *P. vesta* Edw.
18. *P. simois* Hew.
19. *P. ursula* Staud.
20. *P. saladillenois* Giac.

P. anomalus group.

Wings shaped as in the *P. tharos* group. Upperside with a postdiscal series of white spots on both wings, but fore wing without fulvous or yellow spots; outer margins cinnamon-red beneath.

21. *P. anomalus* Godm. & Salv.

P. fasciata group.

Characters as in *P. tharos* group, but discal and postdiscal spots on hind wing above united to form a broad yellow band; outer margins very even, scarcely sinuate.

22. *P. fasciata* Hopff.

P. pelops group.

Characters as in the *P. tharos* group, but hind wing of the ♂ with a prominent tuft of long hairs on outer margin.

23. *P. proclea* Doubl. & Hew.
24. *P. pelops* Drury.

P. miriam group.

Wings shaped as in *P. fasciata* group, but markings above bluish-white; fore wing with submarginal line only, hind wing with postdiscal wings and submarginal lines.

25. *P. miriam* Dogn.

P. liriope group.

Outer margins very evenly rounded and smooth, scarcely sinuate; ciliae quite inconspicuous. Markings above variable, but hind wing always without separate postdiscal band or spots. Underside of hind wing marked with only fine lines or striae; submarginal lunules only outlined, that in 3 not enlarged. Although a little difficult to define the general facies of the group is unmistakable; No. 34 perhaps does not belong here.

26. *P. amazonica* Bates.
27. *P. liriope* Cram.
28. *P. nazaria* Feld.
29. *P. cluvia* Godm. and Salv.
30. *P. etia* Hew.
31. *P. tissoides* sp. nov.
32. *P. nigrella* Bates.
33. *P. flavida* Hew.
34. *P. fontus* sp. nov.

P. teletusa group.

Fore wing rounded at apex, the outer margin convex, straight or only faintly concave below vein 4. Markings above tawny, fulvous or ochraceous; discal spots in 1 b and 3 of fore wing, when present, contiguous with the spot in 2, the spot in 4 well separated from that in 3, so that spots 4 to 6 form a separate section; postdiscal spot in 3 absent; discal band of hind wing entire, not macular; postdiscal band absent or represented by a fine line.

35. *P. teletusa* Godt.
36. *P. rima* sp. nov.
37. *P. faustus* Godm. and Salv.
38. *P. orthia* Hew.
39. *P. velica* Hew.

P. drusilla group.

Outer margin of fore wing more or less distinctly excavated below vein 4; apex more or less truncate. Markings above fulvous, ochraceous or white. Fore wing discal spots in 1 b and 3, when present, contiguous with the spot in 2 and placed immediately above and below it, spots 4 to 6 generally (except in *P. drusilla alceta* and *P. drusilla verena*) well separated from the spot in 3, forming a separate subcostal band; postdiscal spot in 3 absent. Hind wing discal band entire or macular, sometimes reduced to thin lunules; postdiscal band (except in *P. frisia frisia*) reduced to a thin line or absent.

Many of the species of this large group are very similar in appearance, but except in *P. drusilla* itself all the forms are very constant where they occur.

40. *P. frisia* Poey
41. *P. drusilla* Feld.
42. *P. ardys* Hew.
43. *P. ptolyca* Bates
44. *P. cortes* Hall.
45. *P. drymaea* Godm. and Salv.
46. *P. sosis* Godm. and Salv.
47. *P. sitalces* Godm. and Salv.
48. *P. texana* Edw.
49. *P. hermas* Hew.
50. *P. dracaena* Feld.
51. *P. nebulosa* Godm. and Salv.
52. *P. ithra* Kirby.
53. *P. orticas* Schaus.
54. *P. fulgora* Godm. and Salv.
55. *P. acesas* Hew.

P. atronia group.

Sexes dimorphic. Males dark brown above, scantily marked; hind wing with a patch of dull sericeous scales extending from the costa to vein 4. Females similar to the *P. drusilla* group, but underside of hind wing like the ♂♂.

56. *P. atronia* Bates.

P. otanes group.

Males with patch of dull sericeous scales on hind wing above covering the whole wing except the marginal border. Females of the pattern of the *P. drusilla* group (*P. otanes*), or more or less similar to the ♂ ♂ (*P. fulviplaga*).

57. *P. otanes* Hew.
58. *P. fulviplaga* Butl.

P. abas group.

Fore wing outer margin rounded, not excavated. Markings above white or pale ochraceous; general pattern as in *P. drusilla* group, but discal spot in 3 of fore wing absent or more distal than that in 2; when absent the spot in 2 more distal than that in 1 b.

59. *P. abas* Hew.
60. *P. catula* Hopff.
61. *P. pusilla* Salv.

P. flavocincta group.

Outer margin of fore wing scarcely concave below apex. Fore wing above without discal spots but with postdiscal series of ochraceous spots, two of which take the form of rings. Hind wing with discal band, postdiscal and submarginal lines as in *P. drusilla* group.

62. *P. flavocincta* Dogn.

P. delphia group.

Wings shaped as in preceding group. Fore wing above with distinct fulvous discal spots or band; hind wing with a postdiscal series of thin fulvous rings.

63. *P. delphia* Feld.
67. *P. ezba* Hew.
65. *P. dora* Schaus.

P. gaujoni group.

Fore wing outer margin rounded or concave below vein 4. Upperside dark brown, scantily marked; fore wing discal spots absent or faintly indicated; postdiscal spots also absent or represented by thin rings or dots; hind wing with fine discal, postdiscal and submarginal lines, the two former sometimes tending to form rings. All the species obscure and little known.

66. *P. notus* Hall.
67. *P. catenarius* Godm. and Salv.
68. *P. gaujoni* Dogn.
69. *P. sepultus* sp. nov.

70. *P. morena* Röb.

P. jana group.

Fore wing above with oblique fulvous subapical band. Hind wing with three fine transverse lines but no distinct band.

71. *P. trimaculata* Hew.
72. *P. crithona* Salv.
73. *P. jana* Feld.
74. *P. elaphina* Röb.

P. nana group.

Fore wing with oblique white subapical band or a single white spot in cellule 3. Hind wing with three fine transverse lines but no distinct bands.

75. *P. nana* Druce.
76. *P. nussia* Druce.

P. leucodesma group.

Wings short, rounded. Fore wing with broad white band, 6-7 mm. wide at inner margin; hind wing with white band, 7-8 mm. wide.

77. *P. leucodesma* Feld.

P. ianthe group.

Fore wing moderately broad, apex rounded. Markings pure white. Fore wing with discal spots 1 b-3 united to form a short band in which spot 2 projects distinctly more distad than those above and below it.

78. *P. ianthe* Fabr.

P. myia group.

Fore wing narrow, produced; apex rounded but outer margin feeble concave below vein 4. Markings above white or pale yellow, arranged much as in the *P. drusilla* group; fore wing without postdiscal spot in 1 b.

This group is transitional to the section *Eresia*, but the species are non-mimetic.

79. *P. ofella* Hew.
80. *P. myia* Hew.
81. *P. angusta* Hew.

SECTION B.—*Eresia*.

The whole of this section may be regarded as mimetic, since the few species which do not seem to have much similarity to any particular model conform sufficiently to the general pattern to justify the assumption that they are outlying members of some mimetic combination.

The wings are always long and narrow, except in those species which mimic *Actinote*, in which case they are shaped as in that genus; the apex of fore wing is nearly always rounded, only two species having it truncated. The pattern and colour of the markings is highly diversified, being modelled upon that of such widely different genera as *Actinote*, *Ceratinia*, *Dircenna*, *Eueides*, *Heliconius*, etc., but in contradistinction to the section *Phyciodes* the markings on the underside of the hind wings are nearly always bold and definite. The most persistent character on the fore wings is a stripe or patch of variable width extending from the base of the wing more or less parallel with the costa; this may be termed the basal stripe or patch.

The butterflies frequent openings in the forest rather than fields, and generally occur singly, so that it is only rarely that more than two or three specimens are found in one spot. Whereas some species have only a general resemblance to their models, there are others which copy them closely enough to deceive even an expert collector. It is a curious fact that some of the species which appear most closely protected in this way are the rarest, and I have satisfied myself from personal observation in the field that this rarity is absolute and not due to them being overlooked.

P. dicoma group.

Markings above fulvous or tawny; hind wing beneath pale-ochraceous with only fine brown linear markings, as in the *P. liriope* group.

82. *P. dicoma* Hew.
83. *P. polinella* sp. nov.

P. carme group.

Markings above fulvous or pale-yellow. Hind wing beneath with two black transverse lines commencing below middle of inner margin and converging so as to meet at or near vein 5, enclosing between them a silvery-white or yellowish stripe.

84. *P. carme* Doubl. and Hew.
85. *P. polina* Hew.
86. *P. laias* Godm. and Salv.

P. clio group.

Markings above white or cream-colour (pale-rufous in some ♀ forms of *P. letitia*); hind wing beneath with fulvous or chestnut-brown post-discal stripe, the black band internal to it, when present, not divided into two lines.

87. *P. clio* Linn.
88. *P. nauplia* Linn.
89. *P. letitia* Hew.
90. *P. ocellata* Röb.

P. perna group.

General characters as in the preceding group, but markings above fulvous or yellowish; hind wing beneath with two black subbasal stripes separated by a pale stripe.

91. *P. perna* Hew.

P. lansdorfi group.

Fore wing with broad red band; hind wing with pale-yellow median band.

92. *P. lansdorfi* Godt.

P. eunice group.

Markings above fulvous and pale-yellow or wholly fulvous, resembling various species of *Ceratinia* and *Hyposcada*; hind wing with three black bands on both surfaces, sometimes fused together.

93. *P. eunice* Hübn.
94. *P. erysice* Hübn.
95. *P. pelonia* Hew.

P. eranites group.

Sexes dimorphic. Fore wing of the ♂ ♂ rounded at apex; markings above fulvous, recalling *Eueides aliphera* Godt. and allies; hind wing beneath with three black bands. Markings of the ♀ ♀ fulvous and pale-yellow; hind wing with three black bands.

96. *P. eranites* Hew.
97. *P. casiphia* Hew.

P. phillyra group.

Fore wing of the ♂ ♂ distinctly truncate at apex.

98. *P. phillyra* Hew.
99. *P. nigripennis* Salv.

P. sestia Hew.

Sexes dimorphic. Fore wing of the ♂ ♂ with fulvous basal patch and subapical band; hind wing with black subcostal and marginal bands but no discal band. Fore wing of the ♀ with basal patch cream-colour, fulvous or absent; hind wing without black discal band.

100. *P. sestia* Hew.

P. emerentia group.

Sexes dimorphic. Fore wing of ♂ with fulvous basal patch and pure white subapical band. Fore wing of ♀ with fulvous basal patch and white discal spots; hind wing without discal band and with white spots on proximal edge of marginal band beneath.

101. ***P. emerentia*** **Hew.**

P. alsina group.

Sexes dimorphic. Fore wing of ♂ with fulvous or yellow basal patch or stripe and *two* oblique bands of fulvous, yellow or white spots; hind wing without black discal band. Fore wing of ♀ with submarginal yellow spots on both surfaces; basal patch sometimes wanting.

102. *P. alsina* Hew.
103. *P. eutropia* Hew.
104. *P. ithomioides* Hew.

P. margaretha group.

Species recalling the pattern of *Heliconius hierax* Hew. and allies. Fore wing with broad yellow discal band. Hind wing with dark red or chestnut-brown discal area; no black discal band.

105. *P. datis* Hew.
106. *P. margaretha* Hew.

P. moesta group.

Very large species recalling the genus *Dircenna* or *Ceratinia antea* Hew. and its allies. Fore wing largely pale-grey, yellow-grey or rufous-grey; hind wing of similar colour, without black median band; both wings with large white submarginal spots, at any rate beneath. Sexes alike.

107. *P. phaedima* Salv.
108. *P. moesta* Salv.
107a. *P. magniplaga* Röb.

P. levina group.

Fore wing above with broad blue band.

109. *P. levina* Hew.

P. perilla group.

Shape of wings and markings as in the genus *Actinote*; pattern variable, but all species differing from those of other groups in the presence of dark internervular rays between the veins. The group is one of convenience, the species anatomically representing three different types.

110. *P. actinote* Salv.
111. *P. castilla* Feld.
112. *P. aurora* Röb.
113. *P. perilla* Hew.
114. *P. neria* Hew.
115. *P. northbrundii* Weeks.
116. *P. mundina* Druce.
117. *P. epione* Godm. and Salv.
118. *P. callianthina* Hall.

In the following descriptions the nervules and interspaces are numbered as shown in the diagram. The localities given are in almost all cases those from which accurately labelled specimens have been examined; doubtful or obviously incorrect localities have been rejected or marked with a ?.

I. *P. dymas* Edw.

Melitaea dymas Edw. Can. Ent. ix, p. 190 (1877); Skinn., Cat. N. Am. Rhop., p. 15 (1898); Holland Butt. Book, p. 175, t. 16, f. 18 (1898); Seitz, Macrolep., v, p. 433, t. 88, f. F.1 (1913); Barnes and McDunnough, Check List, p. 9 (1917)

= *M. larunda* Streck., Lep., p. 130 (1877); *ibid.*, Cat., p. 189 (1878).

= *M. senrabii* Barnes, Can. Ent. xxxii, p. 43 (1900); Skinn. Suppt., p. 9 (1905).

(*a*) *M. chara* Edw., Can. Ent. xv, p. 209 (1883); Holland Butt. Book, p. 146, t. 17, f. 3, 4, ♂ (1898); Wright, Butt. W. Coast, p. 163, t. 20, f. 195, 195 b. (1906); Seitz, Macrolep. v, p. 433, t. 88, f. F.3, 4 (1913).

= *Phyciodes dymas* Godm. and Salv., Biol. Cent.-Am. Rhop. ii, p. 679, t. 108, f. 13, 14 ♂ (1901).

P. dymas dymas Edw.

Exp. ♂ 22—29, ♀ 25—32 mm.

♂ Upperside blackish-brown with bands of large, pale-fulvous spots, the ground-colour reduced to fine lines. Fore wing cell wholly fulvous, crossed by three black lines; three spots in 1 b. below cell and a transverse spot just beyond end of cell; a median series of small spots in 1 b-5; discal spots 1 b-6 large, forming a curved band, the spots in 5 and 6 slightly paler than the rest; postdiscal spots also large, often partly or wholly fused with the discal spots owing to the black dividing line being obsolete or only present near costa; submarginal spots large, somewhat semicircular, the series complete. Hind wing with large spots on basal half, fairly defined by black lines; a discal and postdiscal band of large spots separated by a fine, sometimes very faint black line; submarginal spots also large, semicircular.

Underside. Fore wing paler than above, the black lines fainter; submarginal spots white, the one in 3 larger than the rest; outer margin fulvous, bordered by a fine black line. Hind wing chalk white; several large fulvous subbasal spots in and around cell, defined by black lines; white discal band with a series of linear black marks near its distal edge; a postdiscal band of fulvous spots; submarginal spots white, large, semicircular, defined with black. Ciliae inconspicuous.

♀ Similar to ♂, but a little paler.

Habitat.—S.W. Texas, Corpus Christi, San Antonio.

(*a*) *P dymas chara* Edw.

♂. Upperside more heavily marked with black than in *P. dymas dymas*. Fore wing with discal spots, 4-6 almost always pale-yellow, more rarely the whole series yellowish. Black line separating discal and postdiscal spots of both wings heavier, complete; submarginal spots of both wings smaller, more lunular, sometimes partly obsolete on hind wing and near apex of fore wing. Underside as in *P. dymas dymas*, but a little darker.

♀. Less heavily marked with black above than the ♂, but more so than in *P. dymas dymas*; discal spots of fore wing sometimes unicolorous or spots 4-6, but little paler; submarginal spots larger than in the ♂, always all present.

Habitat.—California, Palm Springs, San Bernardino, Colorado Desert; Arizona, Pima Co., White Mountains (4000-5,000 ft.), Tucson; Mexico, Northern Sonora, Alamos in Chihuahua.

P. dymas represents a small group of species which are included in *Melitaea* by many authors; Godman and Salvin retain them in *Phyciodes*, whilst Seitz treats some as *Phyciodes* and some as *Melitaea*. *P. dymas* differs from *P. perse* and *P. elada*, the only species with which it is likely to be confused, in its rather more elongate wings, less prominent ciliae, rather heavy black markings on basal area of hind wing beneath, and in only the fore wing having the outer margin fulvous below.

The separation of the two subspecies seems rather weak, but *P. dymas dymas* is a rare form in British collections, and I have seen but few examples of it. *P. dymas chara*, on the other hand, is abundant in certain localities. In a series of over 150 examples collected for me in Arizona by Mr. and Mrs. O. C. Poling, there seem to be two slightly different seasonal forms, specimens taken in June and July differing from those taken in the same localities in February in the white submarginal spots on the fore wing beneath being smaller, those in 1 b and 2 often absent, and the fulvous antemarginal line twice as wide, whilst the submarginal spots of hind wing are also smaller and more heavily margined with black. The larva is stated by Wright to feed on *Beleperona Californica*.

Valve of *P. dymas chara* small, narrow, with two short processes at apex but none near middle. Uncus quite rudimentary, evenly rounded. Saccus with the usual two parallel projections. The whole apparatus feebly chitinized

2. *P. elada* Hew.

Eresia elada Hew. Ex. Butt. iv, Eresia, t. 7, f. 54, 55 (1868); *Phyc. elada* Godm. and Salv., Biol. Cent.-Am. Rhop. i, p. 196, t. 21, f. 6, 7 (1882); *ibid.*, l.c., ii, p. 679 (1901); Röb. in Seitz, "Macrolep.," v, p. 437, t. 89, f. F.4-6 (1913).

= *E. socia* Feld., Verh. Zool. Bot. Geo., 1869, p. 470.

(*a*) *Melitaea callina* Boisd., Lep. Cal. p. 54, n. 39 (1869); Barnes and McDunnough, Check List, p. 9, n. 229 (1917).

= *M. ulrica* Edw., Can. Ent. ix, p. 189 (1877).

= *M. imitata* Streck., Lep., p. 14 (1878).

= *M elada* Holland, Butt. Book, p. 145, t. 17, f. 2 (1898).

(*b*) *P. hepburni* Godm. and Salv., Biol. Cent.-Am. Rhop. ii, p. 679, t. 108, f. 15, 16 (1901); *Melitaea hepburni*, Seitz, "Macrolep.," v, p. 433 (1913).

P. elada elada Hew.

Exp. ♂ 20—30, ♀ 28—33 mm.

♂ ♀. Wings rather shorter and rounder than in *P. dymas* Edw., the cilia more prominent.

Upperside black; markings fulvous. Fore wing with three spots in cell, the middle one double; three spots in 1 b below cell; a bar at end of cell; median spots 1 b-5 small or absent; discal spots large, often distinctly paler than the rest, forming a curved macular band, the spot in 3 being the smallest; postdiscal spots very small, less than half the size of the discal spots, the series complete; a single small submarginal spot in 3, often whitish; the other submarginal spots absent or represented by minute dots. Hind wing with several spots on basal area; discal spots large, contiguous, forming an unbroken band distinctly widened in 4 and 5; postdiscal spots small, roundish, well separated; submarginal spots about as large as the postdiscal spots, more or less lunular or semicircular, the series complete.

Underside—Fore wing paler than above; black markings reduced, especially on basal area; discal spots much paler than those of the postdiscal series, sometimes almost whitish; a submarginal series of small white spots, well separated, the one in 3 much larger than the rest, lunular; outer margin fulvous, bordered by a fine black line. Hind wing chalk white; on basal area several large fulvous spots defined by black lines; white discal band broad, intersected by two fine black lines; a postdiscal series of small fulvous spots bordered with black, the spot in 6 not fulvous but white; a submarginal series of helmet-shaped, large white spots; outer margin fulvous with a fine black line as on fore wing.

Habitat.—Mexico, Cordoba, Cuernavaca, Cuautla, Iguala, Amula, Venta de Zopilote, Palmarito, Tepetlapa, Lake Chapala.

Type in Brit. Mus. from "Mexico." Dated specimens June and July. Common but local in S.W. Mexico on flowery banks, chiefly at elevations of 3,000-5,000 feet. On the Atlantic slope it seems to be rarer, as I have never observed it there.

(*a*) *P. elada callina* Boisd.

♂ ♀. Fulvous spots above more uniform in size and tint than in *P. elada elada*, the discal spots of fore wing smaller and not paler than the rest; postdiscal spots larger.

Habitat.—Mexico, Jalisco, Saltillo; Texas, San Antonio, Corpus Christi.

This rather weak subspecies seems to be constant in Texas, where I have taken it in April, but in some parts of Mexico it occurs as an aberration of *elada elada.* The specimen recorded from Cordoba by Godman and Salvin under the name of *P. imitata* does not seem to be now in the collection at South Kensington.

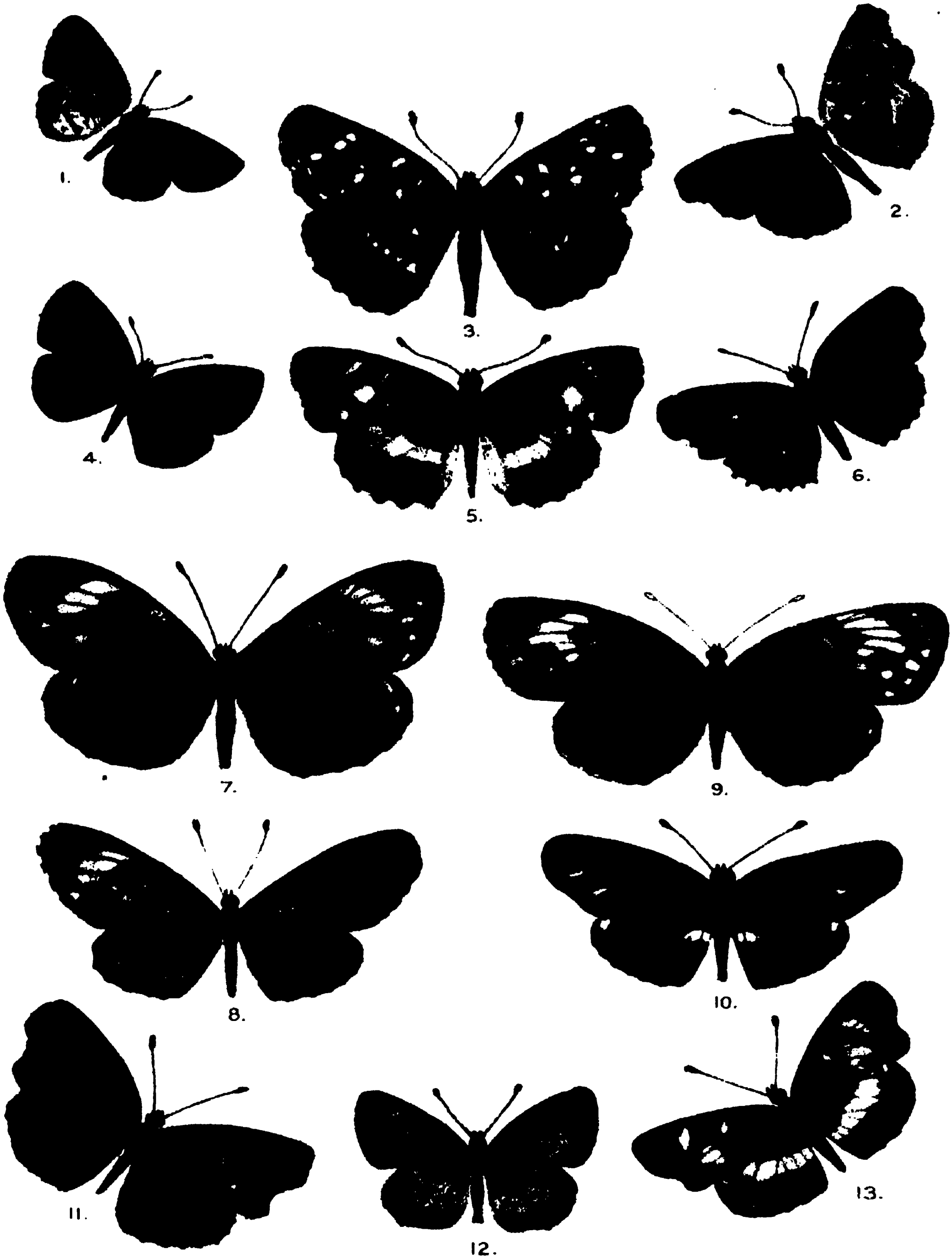
(*b*) *P. elada hepburni* Godm. and Salv.

♂ ♀. Discal spots of both wings pale-yellow above; submarginal spots of hind wing very small and round, not lunular. Submarginal spot in 3 of fore wing beneath not always larger than the rest.

Habitat.—N. Mexico, Pinos Altos in Chihuahua. Type in Brit. Mus.

Appears to be a local race of very restricted distribution. The types, three ♂ ♂ and one ♀ in the British Museum, are the only specimens I have seen. Male armature of *P. elada elada* closely resembling that of *P. dymas chara*, but valve with three short processes at apex.

(*To be continued.*)



R. Hopkins.

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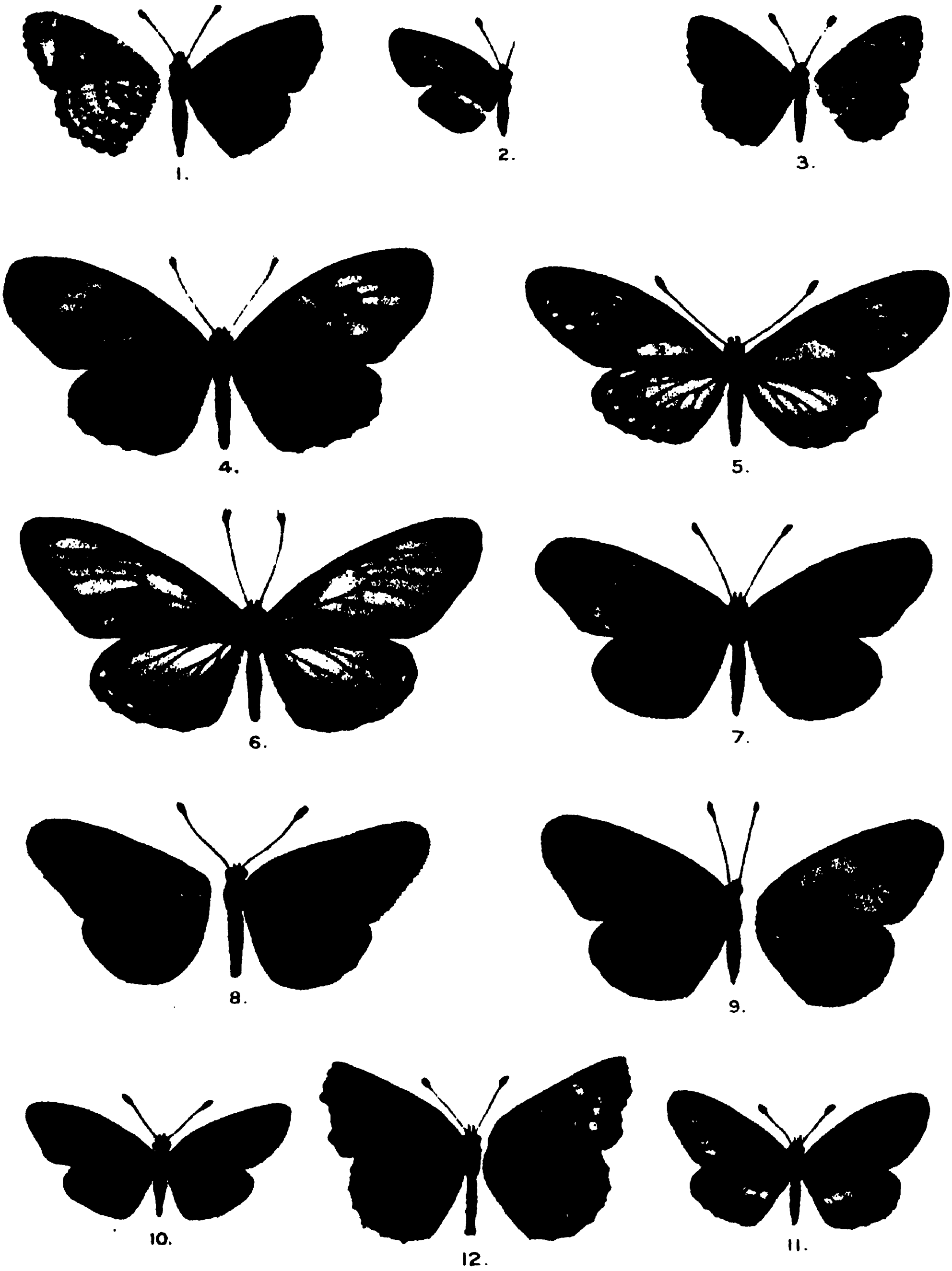
NEW & LITTLE KNOWN FORMS OF PHYCIODES.

EXPLANATION OF PLATE I.

1. *P. tissoides* sp. nov. ♂.
2. *P. acesas* Hew. ♂.
3. *P. ithra rufocincta* form. nov. ♀
4. *P. etia selenoides* form. nov. ♂.
5. *P. orthia* Hew. ♀.
6. *P. ptolyca ptolyca* Bates ♂.
7. *P. casiphia* Hew. ♀.
8. *P. erysice etesiae* subsp. nov. ♂.
9. *P. erysice etesiae* subsp. nov. ♀.
10. *P. carme* Doubl. & Hew. ♂.
11. *P. dracaena* Feld. ♂.
12. *P. nazaria* Feld. ♂.
13. *P. orticas zamora* Hall ♂.

EXPLANATION OF PLATE II.

1. *P. notus* Hall ♂.
2. *P. fontus* sp. nov. ♂.
3. *P. morena* Röb. ♂.
4. *P. eutropia mimas* Staud. ♂.
5. *P. ithomioides cissia* subsp. nov. ♂
6. *P. moesta cerquita* Dogn. ♂.
7. *P. mundina peraea* form. nov. ♂.
8. *P. epione elenae* form. nov. ♂.
9. *P. callianthina* Hall ♀.
10. *P. polinella* sp. nov. ♂.
11. *P. polinella* sp. nov. ♀.
12. *P. sepultus* sp. nov. ♂



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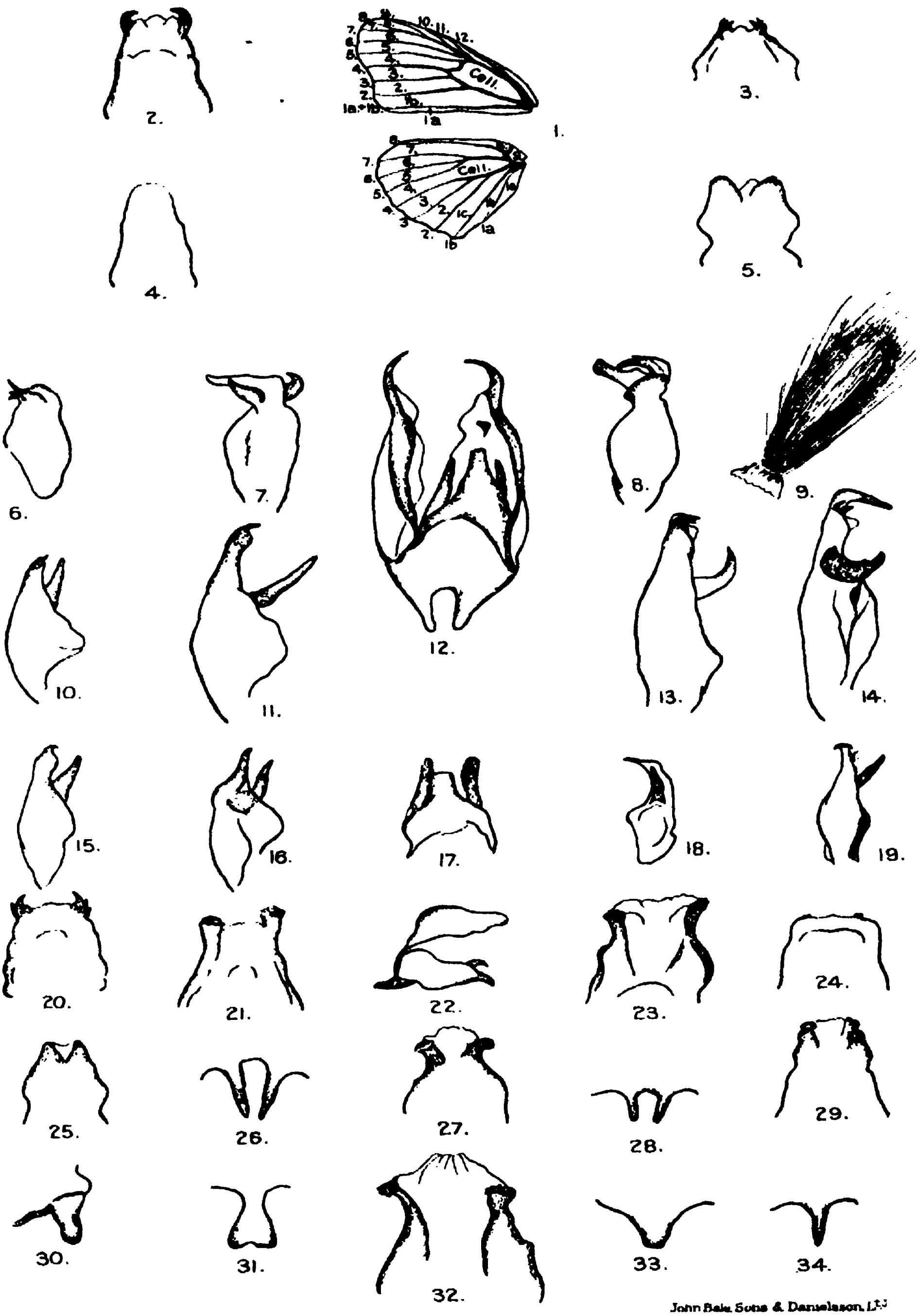
NEW & LITTLE KNOWN FORMS OF PHYCIODES.

Plate 3.



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NEURATION AND GENITAL ARMATURE OF PHYCIODES.

EXPLANATION OF PLATE III.

Neuration and genital armature of *Phyciodes*.

Fig. 1. **Neuration of *Phyciodes*.**
,, 2. *P. phaon* Edw. Uncus.
,, 3. *P. amazonica* Bates ,,
,, 4. *P. ptolyca* Bates ,,
,, 5. *P. acesas* Hew. ,,
,, 6. *P. anomalus coracara* Dyar. Valve.
,, 7. *P. theona* Mén. ,,
,, 8. *P. gorgone* Hubn. ,,
,, 9. *P. proclea* Doubl. & Hew. Tuft.
,, 10. *P. drusilla* Feld. Valve.
,, 11. *P. eranites* Hew. ,,
,, 12. *P. mundina* Druce. Dorsal view of armature.
,, 13. *P. cortes* Hall. Valve.
,, 14. *P. drymaea* Godm. & Salv. ,,
,, 15. *P. castilla* Feld. ,,
,, 16. *P. levina* Hew. ,,
,, 17. *P. epione* Godm. & Salv. Uncus from above.
,, 18. *P. jana* Feld. Valve.
,, 19. *P. teletusa* Godt. ,,
,, 20. *P. abas* Hew. Uncus.
,, 21. *P. eunice* Hubn. ,,
,, 22. *P. liriope guatemalena* Bates. Side view of armature.
,, 23. *P. phaedima* Salv. Uncus.
,, 24. *P. theona* Mén. ,,
,, 25. *P. myia* Hew. ,,
,, 26. *P. dracaena* Feld. Saccus.
,, 27. *P. actinote* Salv. Uncus.
,, 28. *P. mylitta* Edw. Saccus.
,, 29. *P. teletusa* Godt. Uncus.
,, 30. *P. anomalus coracara* Dyar. Saccus.
,, 31. *P. pusilla* Salv. ,,
,, 32. *P. neptoides* Rosenb. & Talb. Uncus.
,, 33. *P. alsina* Hew. Saccus.
,, 34. *P. dicoma* Hew. ,,

A CATALOGUE OF THE LEPIDOPTERA OF HAINAN.

By J. J. JOICEY and G. TALBOT.

(*Continued from the* BULLETIN OF THE HILL MUSEUM, Vol. II, p. 18.)

Forms which are recorded for the first time and those new to science and described elsewhere are marked with an asterick.

AMATHUSIIDAE.

148. **Faunis eumeus eumeus** Drury.

Pap. eumeus Drury, "Ill. Exot. Ent.," i, pl. 2, fig. 3 (1773) (China).
Clerome eumeus Moore, *Proc. Zool. Soc.*, p. 697 (1878).

Interior, April, two ♂ ♂, one ♀; May, one ♂, four ♀ ♀; August, two ♂ ♂; September, thirteen ♂ ♂, one ♀; October, one ♀; December, one ♀. Leanui, wet month, two ♂ ♂, one ♀.

*149. **Stichophthalma nourmahal chuni** J. & T.

Joicey and Talbot, BULL. HILL MUS., i, p. 172, pl. xxiii, fig. 18 (1921) (Hainan).

*150. **Stichophthalma neumogeni le** J. & T.

Joicey and Talbot, BULL. HILL MUS., i, p. 173, pl. xxiii, fig. 20 (1921) (Hainan).

*151. **Stichophthalma howqua bowringi** J. & T.

Joicey and Talbot, BULL. HILL MUS., i, p. 173, pl. xxiii, fig. 19 (1921) (Hainan).

152. **Thaumantis diores hainana** Crowley.

Nandoges hainana Crowley, *Proc. Zool. Soc.*, p. 505 (1900).

Interior, April, two ♂ ♂; May, one ♀; June, one ♂; July, two ♂ ♂, one ♀; August, one ♂, one ♀; September, eleven ♂ ♂, one ♀; October, one ♂; November, one ♀; no date, one ♂. Five Finger Mountains, June, one ♀.

153. **Discophora tullia hainanensis** Fruh.

Seitz' "Macrolep.," ix, p. 443 (1911) (Hainan).

D. tullia Crowley (nec Cram.), *Proc. Zool. Soc.*, p. 505 (1900).

Interior, April, one ♂ ; July, three ♀ ♀ ; August, two ♂ ♂ ; September, four ♂ ♂, three ♀ ♀. Five Finger Mountains, June, one ♂. Leanui, wet month, one ♂, one ♀.

*154. **Enispe lunatus** Leech.

Entomologist, Supplement, p. 26 (1891) (Moupin).

Five Finger Mountains. Fansa, S.W. slope, 5,000 feet, June, 1920, one ♂ ; May, one ♂.

SATYRIDAE.

155. **Ypthima lysandra micrommatus** Holl.

Y. micrommatus Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 115, pl. ii, fig. 3 (1887) (Hainan).

Interior, May, one ♂ ; October, two ♂ ♂ ; December, four ♂ ♂, two ♀ ♀. Five Finger Mountains, April, one ♀.

These specimens appear to represent a wet form, though two approach the figure given by Holland which is probably of a dry season form. We have seen no specimen of *lysandra* Crm. The species appears to be very near *avanta* Moore.

156. **Ypthima zodia** Butl.

Trans. Ent. Soc. Lond., 1871, p. 402 (Shanghai).

Y. zodiaca Moore, *Proc. Zool. Soc.*, p. 696 (1878).

Y. zodia Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 115 (1887).

f. aest. *zodia*.

Interior, March, one ♀ ; April, one ♀ (intermediate) ; May, three ♂ ♂, one ♀ (intermediate) ; October, one ♂, one ♀ (intermodiate); November, one ♂ ; December, one ♂, three ♂ ♂ three ♀ ♀ (intermediate). Five Finger Mountains, Namfung, March, one ♂.

f. vern. *albescens* Pouj.

Y. albescens Poujade, *Ann. Soc. Ent. France*, 1885, pl. xli (Moupin).

Interior, May, one ♂, one ♀ ; July, one ♂, two ♀ ♀ ; September, one ♂, one ♀ ; November, one ♂, one ♀ ; December, fourteen ♂ ♂, fifteen ♀ ♀. Five Finger Mountains, May, one ♂.

157. **Ypthima imitans** Elw. & Edw.

Trans. Ent. Soc. Lond., 1893, p. 17, pl. iii, fig. 53 (Hainan).

? *Y. pandocus* Moore, *Proc. Zool. Soc.*, p. 696 (1878).

Interior, April, two ♀ ♀; June, two ♂ ♂; July, one ♂; August one ♂, two ♀ ♀; September, one ♂; November, two ♂ ♂, one ♀, December, nine ♂ ♂, eleven ♀ ♀: October-March, one ♂.

Five Finger Mountains, Namfung, March, one ♂.

*158. **Ypthima praenubila** Leech.

Entomologist, xxiv, Supplement, p. 66 (1891) (Ta-Chien-Lu).

Five Finger Mountains, June, two ♀ ♀.

These specimens are scarcely different from Chinese examples. One specimen is very large, the fore wing measuring 31 mm.

*159. **Ypthima conjuncta formosana** Fruh.

Ent. Zeit. Stutt., p. 119 (1908) (Formosa).

Seitz' "Macrolep." ix, p. 292, pl. 99f. (1911).

Five Finger Mountains, June, one ♂.

This specimen agrees very well with the figure given in Seitz and is not like Chinese specimens.

160. **Lethe confusa** Auriv. **apara** Fruh.

Lethe rohria apara Fruhst., Seitz' "Macrolep.," ix, p. 315 (1911) (Hong Kong; Hainan).

We did not receive this species.

We follow Aurivillius and Bingham in retaining the name *confusa* for this species, and in treating *dyrta* Feld. as a synonym of *rohria* Fbr.

161. **Lethe europa** Fbr. **pavida** Fruh.

Ent. Zeit. Stutt, 1908, p. 141 (Formosa).

Lethe europa Moore (nec. Fbr.), *Proc. Zool. Soc.*, p. 696 (1878). Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 114 (1887).

Hoihow, May, one ♂; August, one ♂, one ♀. Nodoa, August, one ♂. Interior, January, one ♀; April, one ♂; May, one ♂; September, five ♂ ♂, one ♀.

162. **Lethe rohria rohria** Fbr.

Papilio rohria Fbr., " Mant. Ins.," ii, p. 45 (1787) (North India).

= *dyrta* Feld. (1867).

L. dyrta Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 114 (1887).

L. rohria Crowley, *Proc. Zool. Soc.*, p. 505 (1900).

Five Finger Mountains, April, one ♀; May, four ♂ ♂, three ♀ ♀; no date, one ♂.

The species called *rohria* in Seitz' " Macrolep.," ix, p. 315, i, p. 84, is *confusa* Auriv.

Fruhstorfer states that his *daemoniaca* from Formosa also occurs in Hainan (Seitz' " Macrolep.," ix, p. 317). The Hainan specimens are certainly not the same as the Formosa ones, but agree with Indian examples.

It is doubtful whether specimens from South China can really form a separate race; a series from West Yunnan in the Hill Museum belongs to the Indian form.

*163. **Lethe kansa kansa** Moore.

Debis kansa Moore, Cat. Lep. E.I.C., i, p. 220 (1857) (Sikkim).

Interior, August, one ♂.

*164. **Lethe vindhya vindhya** Feld.

Debis vindhya Feld., *Wien. Ent. Mon.*, iii, p. 402 (1859) (Assam).

Five Finger Mountains, June, one ♂.

*165. **Lethe chandica suvarna** Fruh.

" Insektenborse," 1908, p. 38 (Tonkin).

Five Finger Mountains, May, one ♂, one ♀; Sui Mahn Doorg, South Slope, June, one ♂. Interior, August, one ♂; March, one ♀.

This is slightly different from *coelestis* Leech from China, and as *suvarna* from Tonkin is so near this race that a very bare description is given by Fruhstorfer, there is little doubt that the Hainan specimens should be associated with the Tonkin form. We have seen no Tonkin specimens.

166. **Lethe** (*Hermias*) **verma** Koll. **cintamani** Fruh.

Ent. Zeit. Stutt., 1909, p. 40 (Formosa).

Tanisma verma Crowley (nec Koll.) *Proc. Zool. Soc.*, p. 505 (1900).

Five Finger Mountains, Sui Mahn Doorg, south slope, June, two ♂ ♂;

May, two ♂ ♂, one ♀. Leanui, wet month, one ♂. Interior, April, one ♀; July, one ♂; August, one ♀; September, one ♂.

Fruhstorfer (Seitz' "Macrolep.," ix, p. 324) says that the race *stenopa* Fruh. occurs in Hainan. We are not sure whether *stenopa* is a good race, as we have no specimens from Tonkin, Tenasserim, nor from the Shan States, but Burma specimens are like Indian ones. Hainan examples cannot be distinguished from Formosa ones.

167. **Blanaida muirheadi muirheadi** Feld.

Lasiommata muirheadi Feld., *Wien. Ent. Mon.*, vi, p. 26 (1862) (China).

Neope muirheadi, var. *N. felderi* Leech, "Butts China," i, p. 54, pl. viii, fig. 4 (1894) (Omei-Shan).

N. muirheadi felderi Fruh., Seitz' "Macrolep.," ix, p. 326, (1911).

Zophoessa muirheadi Moore, *Proc. Zool. Soc.*, p. 696 (1878).

Neope muirheadi Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 114 (1887).

Five Finger Mountains, Namfung, March, one ♂. Nodoa, August, one ♀. Interior, May, one ♂; September, one ♂.

Two ♂ ♂, one ♀ belong to the form *felderi* Leech, which is probably a dry season form, though it is treated as a race in Seitz, being known only from Omei-Shan.

*168. **Blanaida bremeri** Feld.

Lasiommata bremeri Felder, *Wien. Ent. Mon.*, vi, p. 28 (1862) (Ning-po).

The name *Blanaida* Kirby was adopted by Moore in "Lep Ind.," Vol. i, p. 299, for *Enope* Moore, and *Neop.* Butl., both preoccupied.

Five Finger Mountains, S.W. slope, May, one ♂, one ♀; June, two ♂ ♂.

There are four ♂ ♂, two ♀ ♀ from China in the Joicey Collection and these are all alike. The Hainan specimens are much darker with all the markings much more strongly developed. Considering the individual variation to which this group is liable, we are unable to separate the Hainan specimens in the absence of much larger material from the mainland as well as from Hainan.

169. **Anadebis diademoides henrici** Holl.

Euploeamima diademoides var. *henrici* Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 113, pl. i, fig. 1 (1887) (Hainan).

E. henrici Crowley, *Proc. Zool. Soc.*, p. 505 (1900).

Interior, September, three ♂ ♂; October, one ♂.

*170. **Coelites nothis digitorum** J. & T.

Joicey & Talbot, BULL. HILL MUS., i, p. 174, pl. xxiv, fig. 23 (1921) (Hainan).

171. **Mycalesis perseus perseus** Fbr.

Pap. perseus Fbr., *Syst. Ent.*, p. 488 (1775).

Mycalesis perseus Moore, *Proc. Zool. Soc.*, p. 696 (1878).

Calysisme perseus Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 115 (1887).

f. aest. *perseus*.

Interior, March, one ♂; May, one ♂; July, one ♀; October, one ♀; November, two ♂♂; December, two ♂♂, one ♀.

f. vern. *blasius* Fbr.

Pap. blasius Fbr., *Ent. Syst.*, Suppl., v, p. 426 (1798).

Interior, March, one ♂; April, one ♀; May, four ♂♂, three ♀♀; July, one ♀; September, one ♂; October, one ♂; December, three ♂♂, two ♀♀.

172. **Mycalesis mineus zonata** Mats.

Ent. Zeit. Stutt., 1909, p. 92 (Formosa).

Calysisme mineus Holland (nec L.), *Trans. Amer. Ent. Soc.*, xiv, p. 115 (1887).

Mycalesis mamerta Crowley (nec Cram.), *Proc. Zool. Soc.*, p. 505 (1900).

We follow Fruhstorfer in associating the Hainan specimens with the Formosan ones, but this race is doubtfully distinct. With such variable forms very large series are necessary to establish racial differences.

Interior, March, one ♂; April, two ♂♂; one ♀; May, five ♂♂, two ♀♀; June, one ♂; July, two ♂♂, two ♀♀; August, one ♂, one ♀; October, two ♀♀; November, two ♂♂, three ♀♀; September, two ♀♀; December, eight ♂♂, four ♀♀; no date, one ♂- Hoihow, June, one ♂, one ♀; October, one ♂; August, one ♀.

f. aest. *otrea* Cram.

Pap. otrea Cramer, "Pap. Exot.," iv, p. 50, pl. cccxiv, A.B. (1780) (China).

Interior, March, two ♂♂; May, one ♀; October, one ♀; November, two ♂♂, two ♀♀; December, twelve ♂♂, fourteen ♀♀. Five Finger Mountains, Namfung, March, one ♀.

We beg to differ from Fruhstorfer in Seitz' "Macrolep.," ix, p. 347, 1911, in treating *mamerta* Cram. as a distinct species. This appears to be an intermediate form of *mineus* L.

173. **Mycalesis mineus f. mamerta** Cram.

Pap. mamerta Cram., "Pap. Ex.," iv, p. 75, pl. cccxxvi, D. (1780) (China).

M. mamerta Crowley, *Proc. Zool. Soc.*, p. 505 (1900).

We did not receive this form.

*174. **Mycalesis horsfieldi panthaka** Fruh.

Seitz' "Macrolep.," ix, p. 345, t. 93b (1911) (Formosa).

f. vern.

Interior, July, one ♂; September, one ♂.

f. aestiv.

Interior, March, two ♂ ♂; December, one ♂, three ♀ ♀; April, one ♀. Yulinkang, May, one ♂. Nodoa, March, one ♀. Hoihow, December, one ♂.

175. **Mycalesis gotama gotama** Moore.

Cat. Lep. E.I.C., i, p. 232 (1857) (China).

Mycalesis charaka Moore, *Proc. Zool. Soc.*, p. 696 (1878).

Sadarga charaka Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 115 (1887).

f. vern.

Interior, April, one ♂. Five Finger Mountains, May, one ♂, one ♀; S.W. slope, June, one ♀.

f. aestiv.

Interior, May, one ♀.

176. **Mycalesis anaxias anaxias** Hew.

"Exot. Butt.," iii, Myc., pl. 4, figs, 25, 26 (1862) (South India).

Interior, April, one ♀; August, one ♀; December, one ♀.

177. **Mycalesis francisca francisca** Cram.

Pap. francisca Cramer, "Pap. Exot.," iv, p. 75, pl. 326, figs. E.F. (1780) (China).

Gareris francisca Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 115 (1887).

We did not receive this species.

178. **Orsotriaena medus medus** F.

Pap. medus Fabr., *Syst. Ent.*, p. 488 (1775).

Mycalesis runeka Moore, *Proc. Zool. Soc.*, p. 696 (1878).

Orsotriaena runeka Holland, *Trans. Amer. Ent. Soc.* p. 115 (1887).

O. medus Crowley, *Proc. Zool. Soc.*, p. 505 (1900).

f. vern. *medus* F.

Interior, March, two ♂ ♂ ; April, three ♂ ♂, one ♀ ; May, one ♂, three ♀ ♀ ; July, one ♂ ; September, one ♂ ; October, one ♂ ; December, two ♂ ♂, five ♀ ♀. Nodoa, August, one ♂. Five Finger Mountains, April, one ♀.

f. aest. *runeka* Moore.

Cat. Lep., E.I.C., i, p. 234 (1857) (Assam).

Interior, March, one ♀ ; May, two ♂ ♂ ; December, six ♂ ♂, four ♀ ♀ ; July, one ♂ ; August, one ♂ ; September, one ♂ ; October, one ♂, one ♀ ; November, one ♀ ; no date, four ♂ ♂, one ♀. Five Finger Mountains, Namfung, March, one ♂.

*179 **Mandarinia regalis regalis** Leech.

Mycalesis regalis Leech, *Trans. Ent. Soc. Lond.*, 1889, p. 102, pl. viii, figs. 2, 2a (Kiukiang).

Interior, April, one ♂; June, one ♂; July, one ♀; September, one ♂. Hoihow, April, one ♂.

This represents the typical form, but a very broad-banded aberration which occurs in China was not present.

*180. **Ragadia crisilda crisildina** J. & T.

Joicey & Talbot, BULL. HILL MUS., i, p. 174, pl. xxiii, fig. 22 (1921) (Hainan).

181. **Melanitis leda ismene** Cram.

Pap. ismene Cramer, "Pap. Exot.," i, p. 40, pl. xxvi, figs. A, B (1775) (China).

M. ismene, Moore, *Proc. Zool. Soc.*, p. 696 (1878); Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 114 (1887).

f. aest. *ismene* Cram.

Interior, March, one ♂, two ♀ ♀; April, five ♂ ♂, two ♀ ♀; September, one ♀; December, two ♂ ♂; no date, one ♂. Nodoa, March, one ♀. Leanui, wet month, one ♂. Five Finger Mountains, May, one ♀; Namfung, March, one ♀.

f. vern. *determinata* Butl.

Proc. Ent. Soc., 1885, p. vi (Bombay).

Interior, April, two ♂ ♂, two ♀ ♀; May, one ♂; August, one ♀; September, four ♀ ♀; no date, one ♂. Five Finger Mountains, Sui Mahn Doorg, S.W. slope, June, one ♀. Hoihow, June, one ♂; March-June, one ♂. Seven Finger Mountains, September, two ♂ ♂.

182. **Melanitis phedima bela** Moore.

M. bela Moore, Cat. Lep. E.I.C., i, p. 223 (1857) (North India).

M. aswa Crowley, *Proc. Zool. Soc.*, p. 505 (1900).

f. vern. *aswa* Moore.

Cyllo aswa Moore, *Proc. Zool. Soc.*, Lond, 1865, p. 769 (Bengal).

Interior, April, one ♂, one ♀; May, one ♂; June, one ♀; July, two ♀ ♀; September, three ♂ ♂, one ♀. Leanui, wet month, one ♀. Nodoa, August, one ♀. Five Finger Mountains, May, one ♂, one ♀; June, one ♂.

The males are very dark on both sides, and the females show no trace of yellow on the fore wing.

We are inclined to associate specimens from Tonkin, Annam and Tenasserim, with the Indian form *bela*.

*183. **Elymnias patna bercovitzi** J. & T.

Joicey & Talbot, Bull. Hill Mus., i, p. 173, pl. xxiii, fig. 21 (1921) (Hainan).

184. **Elymnias nigrescens hainana** Moore.

E. hainana Moore, *Proc. Zool. Soc.*, p. 696 (1878) (Hainan); Holland, *Trans. Amer. Ent. Soc.*, xiv, p. 116 (1887).

Interior, April, six ♂ ♂; May, four ♂ ♂, one ♀; August, five ♂ ♂, two ♀ ♀; September, ten ♂ ♂, three ♀ ♀; November, one ♂, one ♀; December, four ♂ ♂, one ♀; no date, two ♂ ♂, one ♀. Nodoa, August, four ♂ ♂. Leanui, wet month, one ♂. Hoihow, June, two ♂ ♂; April-June, one ♂; May-October, one ♂; August, one ♂.

Very close to the Formosa form which appears only to differ in having the spots on the fore wing placed nearer the margin. The white subcostal spot on the hind wing below is sometimes absent and may be obsolete.

This is probably the same species as *hypermnestra* L. The two so-called species can only be really separated by grouping their mimetic females.

(*To be continued.*)

LIST OF RHOPALOCERA COLLECTED BY MR. C. L. COLLENETTE IN MATTO GROSSO, BRAZIL.

BY G. TALBOT.

Plates VIII, IX, X.

THE species here listed do not include those which form the subject of an article to be published elsewhere in connection with mimicry among *Ithomiines*, *Heliconius*, &c. Nineteen forms are described as new, including a new genus of *Erycinidae*. The types are in the Hill Museum.

LIST OF LOCALITIES.

A. Campo Grande, 150 miles south-east of Corumbá, 1,750 feet, April 10-11, 1927.
B. Urucum, 15 miles south of Corumbá, April 17-30, 1927.
C. Urucum, 15 miles south of Corumbá, November 16-23, 1927.
D. Cuyabá, 1,000 feet, May 11-19, 1927.
E. Nobres, 25 miles south of Diamantino, 1,250 feet, May 21, 1927.
F. Melguira, 10 miles south of Diamantino, 2,000 feet, May 23 to June 3, 1927.
G. Tombador, 16 miles south of Diamantino, 1,500 feet, June 4-6, 1927.
H. Tombador, 16 miles south of Diamantino, 1,500 feet, July 24-31, 1927.
I. Tombador, 16 miles south of Diamantino, 1,500 feet, August 1-27, 1927.
J. Burity, 30 miles north-east of Cuyabá, 2,250 feet, June 11-30, 1927.
K. Burity, 30 miles north-east of Cuyabá, 2,250 feet, July 1-14, 1927.
L. Burity, 30 miles north east of Cuyabá, 2,250 feet, September 6-30, 1927.
M. Burity, 30 miles north-east of Cuyabá, 2,250 feet, October 1-22, 1927.

N. Rio de Casca, 60 miles north-east of Cuyabá, 2,400 feet, June 16, 1927.

O. Mutum, 20 miles west of Porto Suarez, Bolivia, November 7-14, 1927.

The wet season in the area covered by these localities ends during March, and commences, with occasional storms, in September. No collecting was done during the heavy rains from December to February.

Family PAPILIONIDAE.

1. *Papilio anchises orbignyanus* Lucas (1852).

Locs. B, one ♂; C, two ♂♂, one ♀; E, one ♂; O, one ♂, all flying in original forest.

The female specimen is without a cell-spot.

2. *Papilio lysander* Cram. mattogrossensis subsp. nov. (pl. IX, fig. 3 ♂, 4 ♀).

♂. Upperside of fore wing with a broader and more greenish coloured patch. A somewhat rounded greyish-white spot in 2, variable in size and more or less edged with greenish-blue; a second and smaller spot in 3, which may, however, be absent. Underside with the white spots well-defined, and a third spot below vein 2 smaller than the one above it. Hind wing with the red stripes longer and placed nearer the cell.

♀. Fore wing with the spots variable and not constantly different from the typical form. Hind wing with the red patches longer and broader and placed nearer the cell.

Habitat.—Melguira, 10 miles south of Diamantino, 2,000 feet, May 30, 1927, one ♂ (type H. T.), flying in original forest. Melguira, May 30, 1927, one ♀ (allotype), collected by Miss C. Longfield. Burity, 30 miles north of Cuyabá, 2,250 feet, September 11, 1927, one ♀ on wet sand by river bank. Also in the Hill Museum from River System. Cuyabá, Corumba, two ♂♂, four ♀♀.

3. *Papilio neophilus eurybates* Gray (1852).

Locs. G, one ♂; I, four ♂♂, six ♀♀; J, five ♂♂, four ♀♀; K, one ♂, one ♀; L, one ♀.

4. *Papilio polydamas polydamas* L. (1758).

Locs. B, four ♂ ♂, one ♀; H, eight ♂ ♂; I, two ♂ ♂; J, two ♂ ♂; K, one ♂, one ♀. The ♂ ♂ on wet sand, the ♀ ♀ flying in original forest.

5. *Papilio crassus crassus* Cram. (1777).

Loc. I, August 25, 1927, one ♂. Flying up and down stream in original forest.

6. *Papilio thoas brasiliensis* R. and J (1906).

Locs. B, three ♀ ♀ on flowers at edge of forest; I, one ♂ on wet sand; L, two ♂ ♂, one ♀ on wet sand.

7. *Papilio lycophron phanias* R. and J. (1906).
Loc. L, six ♂ ♂.

8. *Papilio androgeus androgeus* Cram. (1775).
Loc. L, six ♂ ♂.

9. *Papilio anchisiades anchisiades* Esp. (1788).
Locs. B, one ♂; J, one ♂; K, two ♂ ♂; L, one ♂; O, one ♂.

10. *Papilio torquatus polybius* Swans. (1823).
Loc. B, three ♂ ♂ on damp ground in thin forest.

♀ f. *theras* R. and J. (1906), one from Urucum, April 22, 1927, flying in original forest.

♀ f. *caudius* Hbn. (1806), one from Urucum, April 26 1927, on a flower at edge of forest.

These forms do not appear to have been recorded previously from Matto Grosso, and it is to be noted that the typical ♀ *polybius* was not obtained.

11. *Papilio pausanias pausanias* Hew. (1852).
Locs. I, three ♂ ♂; L, sixteen ♂ ♂. Apparently not previously recorded from Matto Grosso.

12. *Papilio microdamas* Burm. (1878).
Loc. C, November 19, 1927, on mud at bank of river. Apparently not previously recorded from Matto Grosso.

13. *Papilio ariarthes gayi* f. *cyamon* Gray (1852).
Locs. H. one ♂; L, nine ♂ ♂. These specimens show a better developed white band on the fore wing, and a broader and more extended red band on the hind wing than in most of the series in the Hill Mus. coll.

14. *Papilio agesilaus autosilaus* Bates (1861).

Locs. I, eight ♂♂; L, three ♂♂.

15. *Papilio protesilaus protesilaus* L. (1758).

Locs. H, seven ♂♂; I, one ♂; J, fourteen ♂♂.

16. *Papilio orthosilaus* Weym. (1899).

Locs. A, one ♂; J, two ♂♂; K, three ♂♂; L, one ♂. Collected on damp sand. Also several specimens in Hill Museum from Matto Grosso, including ♀.

17. *Papilio telesilaus telesilaus* Feld. (1864).

Locs. A, one ♂; H, six ♂♂; I, six ♂♂; J, one ♂.

18. *Papilio thyastes thyastes* Drury (1782).

Locs. H, nine ♂♂; I, nine ♂♂. There is a tendency for the band at the end of cell and the postdiscal one on fore wing to be broader, and for the submarginal band to be joined to these instead of being separated by a thin line. Apparently not previously recorded from Matto Grosso.

19. *Papilio dolicaon deileon* Feld. (1865).

Locs. I, one ♂; L, four ♂♂.

Family PIERIDAE.

20. *Pieris phileta automate* Burm. (1878).

A single ♂ taken by Miss C. E. Longfield at loc. B.

This species is commonly known as *monuste*, but I am indebted to Mr. H. T. G. Watkins for pointing out that Linne's insect is really *Udaina cycnis* Hew. Comparisons with the original descriptions leave no doubt on the matter.

21. *Itaballia demophile demophile* L. (1767).

The hind wing below, in these specimens, has a brownish tinge which is however, white in worn examples.

Loc. B, twelve ♂♂; five ♀♀, occurring in original forest, the ♂♂ congregating on damp leaves in shade of forest.

22. *Appias drusilla* Cram. (1777).

Locs. B, five ♂♂, one ♀; H, one ♂; I, two ♂♂; J, two ♂♂. Also one ♀ with much narrower dark borders taken by Miss C. E. Longfield at loc. B.

23. *Daptonoura lysimnia* form or subsp. **bianca** Fruh. (1907).

These specimens agree best with this Bolivian form, but are not entirely the same. The range of variability in *bianca* is not known, but *lysimnia* is very variable. The Matto Grosso specimens have the hind wing below entirely yellow but this varies from pale straw-colour to ochre-yellow. The black margin of the hind wing above varies from a line only to a width of 2 mm.

The ♀ resembles the ♂, but the dark margins are broader with much more pronounced sinuous or toothed edges. There are no spots on the black hind wing border. A ♀ in coll. Hill Mus. from "Cuyabá-Corumba River System," is smaller, pale yellow above, and with four yellow spots on the border of the hind wing.

Locs. J, thirty-nine ♂ ♂, one ♀; K, three ♂ ♂.

24. *Terias arbela arbela* Hbn. (1832).

One ♂ from loc. A, collected by Miss C. E. Longfield.

25. *Terias deva* Doubl. (1847).

Locs. B, one ♂, one ♀; H, one ♂

26. *Terias leuce* Bdv. (1836).

One ♂ from loc. B, collected by Miss C. E. Longfield.

27. *Terias thymetus* Fbr. (1787).

These specimens have no brownish spot at the distal margin of hind wing below. The black margin of fore wing is less broad than in the specimen figured in Seitz' "Macrolep," v, pl. 24c.

Locs. F, one ♂; I, one ♂.

28. *Terias neda* Godt. (1819).

Locs. B, one ♂; F, one ♂. Also one ♂ from loc. A collected by Miss C. E. Longfield.

29. *Terias musa* Fbr. (1793).

Loc. F, one ♂. Black border of fore wing rather broad.

30. *Terias eleathea plataea* Feld. (1865).

Locs. A, ten ♂ ♂; B, one ♂; J, one ♂.

31. *Terias albula albula* Crm. (1775).

In the six specimens the hind wing above varies from being without any dark border to having a broad and well-defined one.

Locs. B, one ♂; E, one ♂; F, two ♂ ♂; J, one ♂, one ♀.

32. *Terias paula* Röb. (1910).

Locs. I, one ♂; J, four ♂ ♂. Also in the Hill Mus. from Rio, Minas Geraes, and North Paraguay. Evidently a distinct species.

33. *Catopsilia eubule sennae* L. (1767).

Locs. A, one ♂; B, three ♂ ♂; D, one ♀; I, one ♂; J, one ♂; K, one ♂.

A female was bred from a larva found at Urucum, April 27, 1927, crawling on ground. Description of larva: Lemon-yellow with a golden spiracular line, two small purple spots at either side of each spiracle. Pupated on underside of leaf April 28, 1927. Pupa salmon-pink, without spots. Emerged May 6, 1927, a.m.

34. *Catopsilia philea* L. (1767).

Locs. H, four ♂ ♂; I, eight ♂ ♂; J, one ♂; N, one ♂.

35. *Catopsilia argante argante* F. (1775).

Locs. H, two ♂ ♂; I, three ♂ ♂; K, one ♂.

36. *Catopsilia argante* f. *hersilia* Crm. (1779).

Locs. H, one ♂; I, three ♂ ♂; J, one ♂; K, one ♂.

37. *Catopsilia trite* L. (1764).

Locs. A, one ♂; J, four ♂ ♂.

38. *Catopsilia statira statira* Crm. (1779).

Locs. B, one ♂; H, one ♂; I, two ♂ ♂, one ♀; J, nine ♂ ♂; K, one ♂.

39. *Gonepteryx menippe menippe* Hbn. (1806-16).

Loc. M, one ♂.

40. *Gonepteryx menippe* f. *calypso* Röb. (1910).

Locs. D, one ♂; I, three ♂ ♂.

41. *Gonepteryx clorinde* Godt.

Locs. B, two ♂ ♂; I, one ♀.

42. *Dismorphia licinia* Crm.

Locs. J, 11 ♂ ♂; K, two ♂ ♂; L, one ♂. All very constant.

Family DANAIDAE.

43. *Anosia erippus* Cram. (1775).

Loc. G, five ♂ ♂, one ♀. Very abundant on *Asclepias.*

44. *Anosia gilippus gilippus* Cram. (1775).

Locs. B, one ♂; G, two ♂ ♂; J, two ♂ ♂; K, three ♂ ♂. Very abundant on *Asclepias.*

Family SATYRIDAE.

45. *Pierella lamia chalybaea* Godm. (1905).
Locs. F, two ♂ ♂, one ♀; G, one ♂; H, two ♀ ♀; I, one ♀; J, five ♂ ♂, one ♀; K, one ♂.

46. *Taygetis mermeria tenebrosus* Blanch. (1847).
Locs. H, one ♂; I, one ♂, one ♀; L, one ♀.

47. *Taygetis virgilia rufomarginata* Stgr. (1888).
Locs. F, one ♂; G, one ♂; J, one ♂; K, two ♂ ♂.

48. *Taygetis celia keneza* Butl. (1869).
Loc. F, one ♀.

49. *Taygetis andromeda andromeda* Cram. (1776).
Locs. H, one ♂; I, one ♂; J, one ♂.

50. *Taygetis andromeda* f. *cleopatra* Feld. (1862).
Locs. F, two ♂ ♂; I, one ♀. This ♀ has the underside almost entirely violet-grey against which the dark brown margin is very distinct.

51. *Taygetis echo echo* Cram. (1775).
One ♂ collected by Miss C. E. Longfield at Melguira, June 1, 1927.

52. *Taygetis tripunctata* Weym. (1907).
Locs. G, one ♂; H, one ♂.

53. *Taygetis penelea penelina* Stgr. (1888).
Locs. H, five ♂ ♂, one ♀; J, one ♂.

54. *Taygetis kerea* Butl. (1869).
Loc. B, three ♂ ♂.

55. *Amphidecta reinoldsi* Weym. (1910).
Loc. F, one ♂.

56. *Euptychia hesione hesione* Sulz. (1776).
Locs. F, two ♂ ♂, two ♀ ♀; H, one ♂; J, one ♂, one ♀; K, one ♂.

57. *Euptychia hesione* f. *subobscura* Weym. (1910).
Loc. H, one ♂.

58. *Euptychia hesione* f. *binocula* Butl. (1869).
Loc. F, one ♀.

59. *Euptychia armilla* Butl. (1867).

Loc. F, fourteen ♂♂, one ♀.

60. *Euptychia armilla* f. *strigillata* Weym. (1910).

Loc. F, thirty ♂♂, one ♀. This appears to be a dimorphic form and was taken with typical *armilla* at the same time. Some specimens show intermediate variation on the underside. Both forms have a raised patch of scales on the fore wing and this patch varies in size.

61. *Euptychia penelope penelope* F. (1775).

Locs. D, three ♂♂; F, one ♂, one ♀; G, one ♀.

62. *Euptychia ocelloides* Schaus (1902).

Loc. J, one ♂.

63. *Euptychia hermes hermes* F. (1775).

Locs. A, one ♂; B, one ♂; D, one ♂; F, one ♂; L, one ♂.

64. *Euptychia hermes* f. *fallax* Feld. (1862).

Loc. F, two ♂♂.

65. *Euptychia poltys binalinea* Butl. (1866).

Loc. B, one ♂.

66. *Euptychia phares phares* Godt. (1823).

Loc. B, two ♂♂.

67. *Euptychia yphthima pacta* Weym. (1911).

Loc. B, one ♂; one ♀.

Family BRASSOLIDAE.

68. *Brassolis sophorae vulpeculus* Stich. (1901).

Loc. A, one ♂.

69. *Opsiphanes invirae remoliatus* Fruh. (1907).

Loc. B, one ♀. Also one ♀ from loc. B, taken by Miss C. E. Longfield.

70. *Caligo teucer japetus* Stich. (1903).

Loc. J, one ♂.

71. *Caligo ilioneus ilioneus* Cram. (1779).

Loc. F, one ♂. Also one ♀ which flew on board the steamer at dusk June 5, 1927, near Cuyabá.

72. *Narope cyllastros* Westw. **denticulatus** subsp. nov. (pl. viii fig. 13).

♂. Fore wing with the outer margin crenulate; in *cyllastros* it is quite even. Hind wing slightly more dentate than in *cyllastros*. Fore wing above with a dark reddish-brown discal shade broadening out to the costa, in the paratypes entirely pale reddish-brown. Hind wing smoky-brown in the type, with traces of reddish-brown on the disc, in the paratypes pale reddish-brown with a smoky-brown marginal border which is broader than in *cyllastros*.

Underside markings as in *cyllastros* but with more ochraceous irroration, especially in the paratypes which have also some grey-white scaling on the inner margin of hind wing and a similarly coloured border to the submarginal line.

Habitat.—Matto Grosso: Tombador, June 6, 1927, one ♂ (Type), found settled on a patch in the sun in original forest. Also in the Hill Museum from Matto Grosso (probably farther east) two ♂♂.

Family MORPHIDAE.

73. *Morpho achilles pindarus* Fruh. (1910).

Locs. G, one ♀; I, three ♂♂, one ♀; J, one ♂; K, two ♂♂; L, five ♂♂.

When Mr. W. J. Kaye arranged the Morphidae in the Hill Museum some years ago, he formed the conclusion, by dissection of the genitalia and the study of the geographical forms, that only a single species is comprised under the names *achilles, achillaena* and *patroclus* as given in Seitz. We are disposed to accept this view.

74. *Morpho achilles achillaena* Hbn. (1821-34).

Loc. B, two ♂♂, two ♀♀.

75. *Morpho menelaus* **mattogrossensis** subsp. nov. (pl. ix, fig. 1 ♂, 2 ♀).

Allied to the race *nestira* Hbn.

♂. Differs from *nestira* in the smaller black apical area of the fore wing and the narrower black margin of both wings.

Underside darker than in *nestira* and with less marked grey irroration on the distal area of the fore wing; this light area is posteriorly narrowed as compared with *nestira*. Hind wing with the grey distal area narrower and better defined, and the inner red submarginal line more heavily marked.

♀. Fore wing with the white postcellular patch strongly toothed in cellule 5, and not prolonged below vein 4. Hind wing with the blue area not dentate on its outer edge. Submarginal spots smaller than in *nestira* and tinged with blue. Underside with less white irroration than in *nestira* and differing in the same points as described for the ♂.

Habitat.—Burity, September 26, 1927 (♂ holotype), June 22, 1927 (♀ allotype), one ♀, October 16, 1927. Also four ♂ ♂ in Coll. Hill Museum from "Cuyabá-Corumbá River System."

Family NYMPHALIDAE.

76. *Heliconius xanthocles melete* Feld. (1867).
Locs. J, one ♀; K, two ♂ ♂.

77. *Heliconius clytia clytia* Cram. (1775).
Locs. F, one ♂; I, one ♂.

78. *Eueides aliphera* Godt. (1819).
Loc. H, one ♂.

79. *Metamorpha dido wernickei* Röb. (1905).
Locs. D, three ♂ ♂; J, one ♂, one ♀; K, three ♂ ♂, two ♀ ♀.

80. *Colaenis julia* F. (1775).
Locs. B, seven ♂ ♂; F, one ♂; K, two ♂ ♂. Also one ♀ from loc. B, collected by Miss C. E. Longfield.

81. *Colaenis phaetusa* L. (1758).
Locs. B, two ♂ ♂, one ♀; D, one ♂. Also one ♀ from loc. D, collected by Miss C. E. Longfield.

82. *Dione juno* Cram. (1779).
Loc. B, one ♂.

83. *Dione vanillae* L. (1758).
Locs. A, one ♂; B, four ♂ ♂, three ♀ ♀; J, one ♀.

84. *Phyciodes liriope orobia* Hew. (1864).
Locs. A, one ♂; F, three ♂ ♂; G, one ♂; J, one ♀.

85. *Phyciodes burchelli* Moult. (1909).
Locs. A, one ♂; J. eight ♂ ♂.

86. *Phyciodes simois* Hew. (1864).
Loc. B, nineteen ♂ ♂, one ♀.

87. *Phyciodes ianthe ianthe*, Fbr. (1781).
Loc. J, one ♀.

88. *Phyciodes hermas* Hew. (1864).
= *aequatorialis* Röb. 1913, *conferta* Feld. 1867.
Locs. A, one ♂; D, five ♂♂, two ♀♀.

89. *Phyciodes angusta* Hew. (1868).
Locs. J, eight ♂♂; K, one ♂.

90. *Phyciodes nauplia plagiata* Röb. (1913).
Loc. I, one ♂.

91. *Pyrameis myrinna* Doubl. (1849).
Loc. A, one ♀. Also one ♀ from loc. A, collected by Miss C. E. Longfield.

92. *Precis lavinia lavinia* Cram. (1775).
Locs. A, one ♂; B, one ♂.

93. *Precis lavinia* f. *infuscata* Feld. (1867).
Loc. F, two ♂♂.

94. *Anartia amathea roeselia* Esch. (1821).
Locs. E, two ♂♂; G, two ♀♀; J, one ♂; K, one ♂.

95. *Anartia jatrophae jatrophae* L. (1763).
Locs. B, one ♂; D, one ♂, one ♀; F, two ♂♂.

96. *Victorina trayja* Hbn. (1816-1824).
Loc. B, one ♂.

97. *Didonis biblis* F. (1775).
Loc. B, twenty-nine ♂♂, five ♀♀. In three ♂♂, four ♀♀ on the hind wing below there is an additional red spot in cellule 7 midway between base and margin.

98. *Cystineura hypermnestra apicalis* Stgr. (1888).
Variable in extent of white on upperside.
Locs. A, two ♂♂; D, five ♂♂; F, one ♂.

99. *Megalura chiron* F. (1775).
Locs. H, two ♂♂; I, three ♂♂; K, one ♂.

100. *Megalura berania berania* Hew (1852).
Locs. H, one ♂; I, two ♂♂

101. *Megalura peleus* Sulz. (1776).
Locs. B, two ♂♂; F, one ♂; I, one ♂; L, one ♂.

102. *Historia orion orion* Fbr. (1775).

Locs. F, one ♂; I, one ♂; L, one ♂.

103. *Gynaecia dirce* L. (1758).

Locs. F, one ♂; J, one ♂.

104. *Pyrrhogyra neaerea arge* Gosse (1880).

Loc. H, one ♂.

105. *Pseudonica flavilla flavilla* Hbn. ("Exot. Schmett.," ii; t. 17).

Locs. F, four ♂ ♂; H, one ♂; J, two ♂ ♂, two ♀ ♀; K, one ♂.

106. *Pseudonica flavilla lunigera* Fruh. (1907).

Loc. B, four ♂ ♂.

107. *Temenis laothoe santina* Fruh. (1897).

It is doubtful if this form is really racially different to others similarly coloured from Brazil, Peru, the Amazons, and Guiana.

Locs. B, nine ♂ ♂, one ♀; D, one ♂; E, one ♂; F, four ♂ ♂; G, three ♂ ♂, J, two ♂ ♂; K, two ♂ ♂.

108. *Temenis laothoe santina* f. *violetta* Fruh. (1907).

A single ♂ from loc. H.

109. *Catonephele antinoe* Godt. (1824).

A single ♂ collected in the town of Cuyabá, July 16, 1927.

110. *Eunica malvina* Bates (1864).

Loc. M, one ♂.

111. *Eunica margarita ingens* Seitz (1915 .

Locs. J, ten ♂ ♂, one ♀; K, four ♂ ♂; L, two ♂ ♂. Also a ♀ collected by Miss C. E. Longfield at loc. J.

112. *Eunica mygdonia* Godt. (1823).

Locs. F, one ♂; J, one ♂; K, two ♂ ♂.

113. *Eunica volumna tithonia* Feld. (1866).

A single ♀ from loc. I, taken on the leaf of a tree in original forest. This specimen has a broader white band than the one figured by Felder ("Reise Nov.," t. 52, figs. 7, 8).

114. *Eunica bechina* Hew **magnipunctata subsp. nov.**

♂, ♀.—Distinguished by the larger and purer white spots on the fore wing above, and the middle discal spot is well-developed except in one specimen in which it is smaller. Similarly, these spots are strongly marked on the underside. Below, the fore wing has the apex grey, and the hind wing is much darker than in other forms, being irrorated with dark brown or with grey-brown sometimes to the extent of the partial suffusion of the markings.

Habitat.—Locs. F, one ♂, one ♀ (allotype); J, two ♂ ♂; K, three ♂ ♂; L, one ♀. Holotype ♂ from Melguira, May 26, 1927, taken by Miss C. Longfield, together with two other ♂ ♂ from loc. J.

115. *Eunica tatila bellaria* Fruh.? (1908).

Locs. B, one ♂, one ♀; H, one ♂; I, two ♂ ♂. Also one ♀ from loc. I, in which there is no blue scaling on the wings, and the white spots a little larger.

116. *Catagramma hydaspes* Drury (1782).

Loc. N, twenty-six ♂ ♂.

117. *Catagramma hystaspes* Fbr. (1781).

= *zelphanta* Hew. (1858).

Locs. J, seventeen ♂ ♂; K, six ♂ ♂.

118. *Catagramma kolyma* Hew. **connectens** subsp. nov.

♂. Differs from *kolyma kolyma* chiefly by the very narrow submarginal band on the hind wing. Underside of fore wing with the red discal band not touching the red cell-patch. The space between the two white submarginal lines is not occupied by a green line as in the type form, or this line is indistinct.

♀. Markings above more accentuated, and the blue basal areas with a greenish tint. Underside in one specimen with a thin green submarginal line on the fore wing.

Habitat.—Burity, June 19, 1927, ♂ type; Tombador, August 26, 1927, ♀ type. Also locs. G, one ♂; H, fourteen ♂ ♂; I, nineteen ♂ ♂ one ♀; J, six ♂ ♂. Also in the Hill Museum from Cuyabá, two ♂ ♂, Goyaz, Rio Verdey one ♂; Cuyabá-Corumbá River System, two ♂ ♂, also three ♂ ♂ without locality.

The locality "Cuyabá-Corumbá River System" is mainly Goyaz.

The specimens are variable in respect of the red discal patch on fore wing above. This sometimes reaches vein 2; in some specimens it is altogether absent. The submarginal band on the fore wing is on the whole shorter and less strongly marked than in the typical form. In a specimen from Tombador, July, the hind wing below has the white submarginal band broadened, and the pale discal area distally extended so that the black dividing lines are reduced to thin lines only.

119. *Catagramma peristera* Hew. **mattogrossensis** subsp. nov. (pl. viii, figs. 8, 9).

♂. Allied to *pujoli* Ob. (1916) from Goyaz and Upper Amazon. Differs from above in the reduced red discal patch on hind wing. Most specimens are without this patch, where present rarely extends beyond the cell. Underside with smaller ocelli on hind wing. Although these vary much in size they are always farther removed from the blue submarginal band than in allied forms. A similar type of underside occurs in some specimens of the Bolivian forms, but this has always a large red patch on the hind wing. The blue submarginal line varies in width and is less strongly interrupted at the veins than in allied forms.

Habitat.—Tombador, June, two ♂ ♂; July, twenty-three ♂ ♂; August, twenty-one ♂ ♂. Type from Tombador, August 3.

We take the opportunity of noting here that the names *angustifascia* Röber (1923), and *apicalis* Kruger (1925) will sink to *pujoli* Ob. (1916). We can find no difference between specimens representing these names from Taferhina and Goyaz.

120. *Catagramma texa* Hew. **ornata** subsp. nov.

♂. Resembles *vincenti* Ob. (1916) on the fore wing and *texa* Hew. (1864) on the hind wing below. The red band on the fore wing is extended as in *vincenti*, but is only slightly darkened at the inner margin. The subapical band is twice as broad as in allied forms. Hind wing red band variable in extent as in allied forms. Hind wing below as in *texa* except that the blue submarginal line is more strongly developed.

Habitat.—Burity, September 25, 1927, ♂ type; also one ♂, September 9, 1927. In Hill Museum two ♂ ♂ from Cuyabá-Corúmbá River System, and one ♂ without locality.

121. *Catagramma splendens splendens* Ob. (1916).

Loc. B, twenty-eight ♂ ♂.

This is distinguished chiefly by the submarginal spots of the hind wing above being rather small and farther from the margin than in the form which follows. Also the red band is extended nearer the margin. Specimens of these species are in the Hill Museum from Sapucay and the Rio Jejuy, Paraguay.

122. *Catagramma splendens* f. **concolor** forma nov. (pl. viii, fig. 10).

= *C. thamyris* Ob. (part), "Et. Lep. Comp." xi, p. 52 (1916).

♂. Distinguished by the coloration of the hind wing below. The blue markings are reduced and are absent from the post-discal band which is the same as the ground-colour; the black lines forming this band are less heavily marked. This pattern is very similar to that shown in *pygas aphidna* Hew.

Habitat.—S.W. Matto Grosso and Paraguay. Type from Urucum, April 27, 1927, and two others. Also in the Hill Museum from Rio Jejuy, Sao Pedro, North Paraguay, four ♂ ♂; Paraguay, November, 1921, Jorgensen, two ♂ ♂; Sapucay, Paraguay, May, 1902, two ♂ ♂ Paraguay, one ♂; Nivac, Matto Grosso, one ♂.

123. *Catagramma splendens* **coerulea** subsp. nov. (pl. viii, figs. 14, 15).
= *C. thamyris* Ob. (nec Ménétr.) (part), "Et. Lep. Comp.," xi, p. 52, pl. ccxlvii, fig. 2878 (1916) (Goyaz).

♂. Distinguished from *thamyris* by the greater extent of blue on the hind wing above, and by the yellow subapical line on the fore wing below not extended to the inner margin.

Most nearly resembles *splendens* Ob., but has still more blue on the hind wing above, where also the pale blue submarginal spots are heavily marked and placed nearer the margin than in any allied form. The red band on the fore wing is narrower than in *splendens* and is shot and edged with blue; its distal prolongation below vein 2 does not reach so near to the margin as in *splendens*.

Underside of hind wing very similar to the form *concolor*, but the ground-colour is more ochraceous.

The genital armature of these *splendens* forms shows no differentiating character.

Habitat.—East Matto Grosso to Rio, Brazil. Type from Burity, July 2, 1927. Also from Burity, June, three ♂ ♂, July, two ♂ ♂, September, two ♂ ♂. Also in the Hill Museum from Matto Grosso, nine ♂ ♂; Rio, two ♂ ♂; Amazon (ex Coll. Gr.-Smith) one ♂.

124. *Catagramma astarte codomannus* Fbr. (1781).
Locs. J, ten ♂ ♂; K, eight ♂ ♂; L, one ♂.

125. *Catagramma hesperis hesperis* Guér. (1844).
Locs. G, one ♂; H, five ♂ ♂; I, eleven ♂ ♂.

126. *Catagramma sorana sorana* Godt. (1823).
Locs. B., two ♂ ♂; I, two ♂ ♂; J, four ♂ ♂; K, one ♂, one ♀.

127. *Callicore clymena janeira* Feld. (1862).
Locs. A, one ♂; E, one ♂; F, twenty-three ♂ ♂; G, forty-nine ♂ ♂; J, thirty two ♂ ♂.

One specimen from Tombador, in June, has on the underside of the right fore wing a rudimentary ocellus placed on the discocellular veins; a black centre is ringed with white and outwardly by black. Below this and above the origin of vein 4 is a small patch of white scales, and a short streak of similar scales on vein 5. On the left fore wing the black colour invades the red in cellule 3 forming a semi-ocellus with a white dot.

128. *Callicore candrena* Godt. longfieldae subsp. nov. (pl. viii, figs. 16, 17).

♂. Upperside of fore wing with the blue submarginal line reaching to the submedian in most specimens. Hind wing with a greyish-green, heavy submarginal line from the anal angle to vein 5. Black marginal line very narrow.

Underside of fore wing with the red area smaller than in the typical form and the black distal area much wider.

Habitat.—East Matto Grosso, Minas Geraes and Tocantins. Type from Burity, July 10; also from Burity, June, eleven ♂♂, July, five ♂♂, and five ♂♂ collected by Miss C. E. Longfield at Burity, June. Also in the Hill Museum from Matto Grosso, four ♂♂; Cuyabá, one ♂; Tocantins, one ♂; Passo Quatro, Sul de Minas, December 12, 1919, one ♂, August 21, 1922, one ♂.

129. *Dynamine agacles agacles* Dalm. (1823).

Locs. A, ten ♂♂, one ♀; D, one ♀.

130. *Dynamine athemon athemon* L. (1763).

Loc. K., one ♂.

131. *Dynamine coenus coenus* Fbr. (1793).

Loc. A, one ♂.

132. *Dynamine coenus leucothea* Bates (1865).

Loc. E, one ♂.

133. *Dynamine artemesia* Fbr. (1793).

Locs. A, two ♂♂; B, one ♂; H, one ♂; J, two ♂♂, one ♀; K, two ♂♂, one ♀.

134. *Dynamine mylitta* Cram. (1779).

Locs. B, ten ♂♂; F, one ♂; J, one ♂. Also locs. D, one ♀; F, one ♀, obtained by Miss C. E. Longfield.

135. *Dynamine egaea* F. (1775).

Locs. J, five ♂♂, one ♀; K, three ♂♂.

136. *Haematera pyramus pyramus* F. (1781).

Locs. J, thirty-three ♂♂, one ♀; K, one ♂. The size of the patch on the hind wing is variable.

137. *Adelpha cocala urracina* Fruh. (1915).

Locs. I, one ♀; J, one ♂.

138. *Adelpha plesaure cerachates* Fruh. (1915).

Locs. I, one ♀; K, one ♂. These specimens do not show "The reddish-yellow colour running through the whole fore wing." The underside is certainly paler than in the figured *heredia* (Seit v, pl. cvii A), but is not "wax-yellow."

139. *Adelpha cytherea lanilla* Fruh. (1915).

Locs. D, one ♀; I, one ♂. The white band on the fore wing enters the cell in the ♂.

140. *Adelpha thoasa cuyaba* Fruh. (1915).

Loc. K, three ♂♂. Also one ♂ taken by Miss C. E. Longfield at Burity, June 18, 1927.

141. *Adelpha thoasa cuyaba* Fruh. f. **brevifascia f. nov.**

♂. Distinguished by the broader fore wing and much narrower white bands. The band on the fore wing ends with a small spot on the inner margin, which in the type specimen is represented by a short line separated from the band.

Habitat.—Melguira, May 26, one ♂ (type); June 1, one ♂.

142. *Adelpha iphicla pharae* Fruh. (1915).

Locs. B, seven ♂♂; J, one ♂.

143. *Ectima liria lirissa* Godt. (1823).

Loc. K, one ♂. Also two ♂♂ from Burity, June 18-19, 1927, taken by Miss C. E. Longfield.

144. *Ageronia februa sabatia* Fruh. (1916).

Locs. B, three ♂♂; D, two ♀♀; F, one ♀; J, one ♂.

145. *Ageronia chloe rhea* Fruh. (1907).

Locs. J, one ♂; K, four ♂♂; L, one ♂.

146. *Ageronia feronia obumbrata* Fruh. (1916).

Loc. B., one ♂, one ♀.

147. *Peridromia amphinome aegina* Fruh. (1916).

Loc. J, one ♂.

148. *Peridromia arethusa thearida* Fruh. (1916).
Locs. E, one ♀; F, one ♂; I, one ♂; K, one ♂.

149. *Chlorippe agathina agathina* Cram. (1777).
Locs. J, two ♂♂; K, three ♂♂. Also one ♂ with yellow-brown spots instead of white ones, from loc. J.

150. *Chlorippe laure lauretta* Stgr. (1888).
Locs. J, one ♂; K, one ♂.

151. *Prepona demophon demophon* L. (1758).
Loc. K, one ♂. This specimen has a well-defined spot in cellule 4 of the fore wing. The spots above this are much larger than in Guiana specimens. The underside is much paler than in Guiana specimens and much variegated with violet-grey.

152. *Prepona pheridamas pheridamas* Cram. (1777).
Loc. I, one ♂.

153. *Zaretes isidora strigosus* Gmel. (1790).
Locs. B, six ♂♂, two ♀♀; D, one ♂; I, one ♂; K, one ♂. Variable, and transitional to *zethus* Westw.

154. *Hypna clytemnestra* **corumbaensis** subsp. nov.
♂♀. Allied to *huebneri* Btl. (1866). Band of fore wing proximally narrowed so that it does not reach the base of cellule 3, leaving also a larger space at base of 2, and below vein 2 its edge shifted distad and making a rather narrow termination to the band. The ♀ does not differ from the ♂.
Habitat.—Urucum, April 17-30, 1927, seven ♂♂, two ♀♀. Holotype taken April 29, allotype on April 19.

155. *Anaea moretta* Druce (1877).
Loc. B, three ♂♂, one ♀. The ♀ has the light spots dusted with brown, and this is also the case with a ♀ from Bahia where white spotted females occur.

156. *Anaea phidile* Hbn. (1837).
Loc. F, one ♂.

157. *Anaea morvus amenophis* Feld. (1867).
Locs. B, one ♂, two ♀♀; O, two ♂♂. Variable. Also one ♂ taken by Miss C. E. Longfield at Urucum, April 17, 1927.

158. *Anaea morvus stheno* Pritt. (1865).
Loc. L, one ♂.

159. *Anaea oenomais* Bdv. (1870).

Loc. F, one ♂. Also two ♂ ♂ taken by Miss C. E. Longfield at Melguira, June 1 and 3, 1927.

Family ERYCINIDAE.

(Arrangement mainly that of Stichel, in Gen. Insect.)

160. *Euselasia orfita eutychus* Hew. (1856).

Loc. F, six ♂ ♂.

161. *Euselasia mys cytis* Stich. (1919).

Loc. I, one ♂.

162. *Peropthalma tullius tullius* Fab.

Loc. I, one ♂.

163. *Hyphilaria parthenis parthenia* Westw. (1851).

Locs. H, two ♂ ♂, two ♀ ♀; I, one ♀.

164. *Mesosemia thymetus thymetus* Cram. (1777).

Two ♀ ♀ taken by Miss C. E. Longfield at Loc. F.

165. *Mesosemia sirenia* Stich. (1909).

Locs. J, two ♂ ♂ one ♀; K, one ♂ one ♀; L, two ♂ ♂ one ♀.

166. *Eurybia dardus dardus* Fbr. (1793).

Loc. F, one ♂, one ♀.

167. *Eurybia halimede elvina* Stich. (1910).

Locs. B, three ♂ ♂, one ♀; F, one ♀; I, one ♂.

168. *Cremna actoris* Cram. **cuyabaensis** subsp. nov.

♂. Spots of the upperside lighter blue and heavier. Hind wing with the pale costal area more extended. Spots on the underside large and tinged with yellowish-brown.

♀. Differs from *actoris* ♀ by the yellowish-brown colour of the spots above and below; they are also more heavily marked.

Habitat.—Matto Grosso; types ♂ ♀, and four ♂ ♂, three ♀ ♀ from Cuyabá, in the Hill Museum. Also one ♂ from loc. I (C. L. Collenette).

169. *Cremna thasus thasus* Stoll. (1780).

Loc. I, one ♂.

170. *Lyropteryx terpsichore* Westw. (1851).

Loc. I, one ♀.

171. ***Rhetus huanus*** **Saund. (1859).**

Loc. F, one ♂.

172. *Rhetus arthurianus* Shpe. (1890).

Loc. J, one ♂. Also one ♂ taken by Miss C. E. Longfield at loc. J.

173. *Chamaelimnas pansa* Godm. (1903).

Loc. I, one ♂, one ♀.

174. *Chamaelimnas joviana* Schaus (1902).

Loc. B, twelve ♂ ♂. Associated with this species were the moths. The other species of this genus are mimicked by Dioptid and Geometrid moths.

175. *Calephelis virginiensis laverna* G. & S. (1901).

Loc. A, two ♂ ♂. Also one ♂ taken by Miss C. E. Longfield at loc. A, and one ♂ at loc. D.

176. *Parcella amarynthina* Feld. (1865).

Locs. A, one ♂; J, one ♂; L, two ♂ ♂.

177. *Charmona gynaea zama* Bates (1868).

Loc. F, one ♀. Also one ♀ taken by Miss C. E. Longfield at loc. F.

178. *Charmona ocellata* Hew. (1867).

Loc. F, five ♂ ♂.

179. *Chalodeta chaonitis* Hew. (1866).

Loc. F, one ♂.

180. *Caria trochilus* Erich. **parva subsp. nov.**

♂. A smaller form with a darker ground-colour. The green costal patch on fore wing does not reach beyond vein 3, but sometimes a few green scales on the inner margin. Hind wing below with a well-marked submarginal row of black points.

♀. Differs from the typical ♀ in the same way as the ♂. Underside paler with the black spots more strongly marked.

Habitat.—Tombador, July 26, 1927 (♂ type); also one ♂ Tombador July 26, 1927; both found on wet sand. Also in Hill Museum from Cuyabá, six ♂ ♂, two ♀ ♀ (♀ allotype).

181. *Caria castalia marsyas* Godm. (1903).

Loc. L, two ♂ ♂.

182. *Baeotis hisbon* Cram. (1776).
Loc. I, one ♂.

183. *Lasaia meris meris* Cram. (1782).
Locs. A, one ♂; H, one ♂; I, one ♂; L, one ♂.
The so-called race *arsis* Stgr. does not appear constant.

184. *Lasaia agesilas agesilas* Latr. (1809).
Locs. K, one ♂; L, one ♂.

185. *Lasaia agesilas* f. *narses* Stgr. (1886).
Locs. J., six ♂ ♂; M, one ♂.

186. *Amarynthis meneria micalia* Cram. (1776).
Locs. F, two ♂ ♂; G, one ♂; H, two ♂ ♂; I, one ♂; J, one ♂; K, one ♀; L, one ♀.

187. *Lymnas smithiae zoega* Hew. (1852).
Loc. I, five ♂ ♂.

188. *Lymnas ambryllis ambryllis* Hew. (1874).
Locs. H, two ♂ ♂; I, one ♂; K, two ♂ ♂; L, three ♂ ♂.

189. *Lymnas semiota* Butl. (1868).
Locs. G, one ♂; H, one ♀ (yellow band); K, one ♂ (white band); L, one ♂, one ♀.

190. *Mesene phareus rubella* Bates (1868).
Loc. I, one ♀.

191. *Phaenochitonia fuliginea* Bates (1868).
Loc. I, one ♂.

192. *Phaenochitonia sagaris* Cram. (1776).
Loc. J, one ♀.

193. *Charis acanthoides acanthoides* H.-S. (1858).
One ♂ taken by Miss C. E. Longfield at loc. F.

194. *Anteros formosus formosus* Cram. (1777).
Loc. L, one ♂.

195. *Emesis mandana mandana* Cram. (1780).
Loc. L, one ♂. Also one ♂ taken by Miss C. E. Longfield at loc. B.

196. *Emesis tenedia ravidula* Stich. (1910).
Loc. B, six ♂ ♂, four ♀ ♀.

197. *Ematurgina axenus* Hew. (1875).

Locs. B, one ♂; D, one ♂, one ♀: F, two ♂ ♂. Also one ♂ taken at loc. F, by Miss C. E. Longfield.

198. *Thisbe irenea* Stoll. **interjecta** subsp. nov.

♂. More resembles the race *belides* Stich. 1910, from Colombia. Hind wing with the blue marginal line more strongly developed, the blue submarginal line usually touching the blue border of the white band, anal angle yellowish-brown as in the typical race; white subapical band narrower than in *belides*.

Underside of fore wing as in *belides*. Hind wing with narrower yellow markings, especially the postdiscal band. Black anal spot larger.

♀. Resembles the typical form, but on the upperside the submarginal markings are more white. In the type these markings are strongly white. On the hind wing below the black anal patch is rather large.

Habitat.—Matto Grosso and Upper Amazon. Type ♂ from Cuyabá-Corumbá River System, type ♀ from the Juruá. Also in Hill Museum from San Joas, Solimoens, two ♂ ♂: Teffé, July-September, 1878, (Mathan), one ♂; also two ♂ ♂, four ♀ ♀, collected by Mr. Collenette at Melguira (loc. F).

Specimens of *irenea* from Costa Rica represent another race, and it seems probable that other races occur in Minas Geraes, Peru, and Bolivia. The form *atlantis* Stich. 1910, described from Trinidad, is also represented by a ♂ from Venezuela and a ♂ from Pozuzo, Peru. This form is distinguished very easily from any other (excepting Costa Rica specimens) by the yellow-brown postdiscal band on the hind wing below being edged by a white line; this white line is in other forms always separated from the yellow band by the black ground-colour. This character is found in the Costa Rica race.

199. *Polystichtis luciana luciana* F. (1793).

Locs. F, one ♀; H, one ♀; I, two ♂ ♂, one ♀.

200. *Polystichtis emylius emylius* Cram. (1776).

One ♂ taken by Miss C. E. Longfield at loc. D.

201. *Anatole zygia* Hbn. **restricta** subsp. nov. (pl. viii, fig. 11 ♂ 12 ♀).

♀. Belongs to the *egaensis* Butl. type but the white band is much narrower. Fore wing with the band broken into spots above vein 3, the anterior half (placed oblique to the costa) being formed of 6 spots divided by the veins, of which the lower spot (in 3) is the larger. The posterior half consists of 3 spots, the upper one in 2 projecting basad beyond the spot above it; the middle spot square, the lower one narrow. Underside similar to the upper but otherwise resembles *egaensis*.

♂. Darker than other forms. Hind wing above with reduced yellow-brown patch. Fore wing below with the white discal band which runs from vein 3 to the inner margin, only indicated by a line. The white dot in 3 is placed farther from the submarginal white dots than in *zygia*, but this may not be constant.

All spots on both sides smaller than in *zygia*.

Habitat.— ♀ Holotype from Melguira, May 31, 1927, on a flowering plant in sun in fringing forest; ♂ allotype from Melguira, May 31, 1927, taken by Miss C. E. Longfield. Also one ♀ from Melguira, May 26, 1927, taken flying in sun in fringing forest. Also in the Hill Museum one ♀ from Cuyabá.

202. *Anatole glaphyra* Westw. (1852).

Loc. I, one ♀. Also two ♀♀ taken by Miss C. E. Longfield at loc. F.

203. *Echenais senta* Hew. (1853).

Loc. F, three ♂♂.

Joiceya gen. nov. (pl. x).

♂. Neuration of fore wing as in *Echenais*, hind wing as in *Echenais*, except that the first submedian (1*a*) is much shorter. Hind wing longer than in *Echenais* and similar to *Euselasia* in shape. Palpus similar to *Echenais*, except that the 3rd segment is a little longer. Genital armature unlike any other genus in the character of the valve and in the possession of two long appendages to the saccus. Valve with a strong apical excavation forming a blunt hook, and ventrally with a large rounded lobe. Uncus bilobed, the lobes more triangular than in *Echenais* and more resembling *Pandemos*. Scaphium much as in some *Echenais*. Saccus terminating in two long narrow appendages which taper to a point.

Type of genus: *Joiceya praeclarus*.

204. *Joiceya* **praeclarus** sp. nov. (pl. viii, fig. 18).

♂. Upperside of fore wing with black ground—colour and markings of deep sky-blue. A series of six submarginal spots divided by the veins and traversed, close to their outer edge, by a narrow black line. The outer edge of these spots is straight, but they are narrowed proximally and mostly produced to a short streak. Some blue scaling at the base, extending in two specimens over the submedian area. Hind wing of the same blue colour as markings on fore wing, with a black marginal line from apex to anal angle. Fringes of both wings fuscous.

Underside pale fuscous-brown with dull grey markings. Both wings dull grey for the proximal three-fourths, and traversed by lines of the ground-colour. A short subbasal bar in the cell with a second one below it ; a discal line, broken at origin of vein 2 ; a discocellular bar ; a postdiscal line, thicker than the others, reaching the submedian, nearly parallel to the margin, slightly waved on the fore wing. A submarginal row of seven rounded dull grey ocelli in 1*b*, 1*c*, 2-6 ; these are placed between the margin and the edge of the grey ground.

In the specimen from Cuyabá, the underside coloration is only slightly paler in the proximal three-fourths, without a definite greyish tint. On the hind wing above the subbasal and discal bars are marked in black, and are just traceable in the two other specimens.

Antennae black-brown, marked with grey and tipped with yellow. Head and palpi fuscous mixed with grey. Thorax blackish-brown ; pectus and legs pale fuscous. Abdomen blackish-brown above, greyish-white below.

Length of fore wing, 15-18 mm. Length of hind wing (base to anal angle) 12-14 mm.

Habitat.—Matto Grosso, Tombador, June 4-6, 1927, two ♂ ♂ collected by Mr. Collenette (type) ; Cuyabá, one ♂.

205. *Thysanota galena* Bates (1868).

Locs. A, one ♀ ; D, four ♂ ♂, one ♀ ; K, one ♀.

206. *Orimba* **hamatus** sp. nov.

Apparently allied to *velutina* Butl. (1867).

♀. Resembles this sex of *velutina*. The yellow band extends to the margin at the tornus where it forms a proximally directed hook, the point of which reaches the submedian. The proximal area of wing shot with dark blue. Hind wing without markings. Underside paler, band of fore wing as above. Hind wing with a pale broad distal border of smoky-grey, intersected by the veins. No orange scaling at the base.

Habitat.—Cuyabá, two ♀ ♀ (holotype). Also one ♀ obtained by Mr. Collenette at Tombador, August.

207. *Orimba lagus* Cram. (1777).

Two ♂ ♂ taken by Miss C. E. Longfield at loc. F.

These specimens cannot be distinguished from a series in the Hill Museum from French Guiana.

208. *Theope foliorum* Bates (1868).

Two ♀ ♀ taken by Miss C. E. Longfield at Cuyabá, May 16, 1927, and Melguira, June 2, 1927.

209. *Hamearis epulus propitia* Stich. (1910).

Locs. D, one ♂, four ♀ ♀; F, three ♂ ♂; J, two ♂ ♂.

A ♂ specimen from loc. D, which appears to be a form of this insect, differs in the pure white spots of the fore wing. Hind wing below with the discal and subbasal bands grey-white and strongly marked. There is also a ♂ and ♀ in the Hill Museum from Cuyabá.

210. *Hamearis colchis* Feld. (1865).

One ♂ taken by Miss C. E. Longfield at loc. F.

This specimen has a yellowish-brown colour above in which the black spots are distinct and the submarginal white dots obsolete. On the hind wing below the black dots are very broadly edged with white.

211. *Nymula titia arctos* Hew. (1852).

Loc. F, one ♂, one ♀.

212. *Nymula pelops* Fbr. (1787).

Loc. D, two ♀ ♀. Also one ♂ taken by Miss C. E. Longfield at loc. D.

213. *Nymula brennus brennus* Stich. (1910).

Locs. A, one ♂; D, two ♂ ♂.

214. *Peplia lamis lamis* f. *molpe* Hbn. (1806-1819).

Loc. B, one ♀; also one ♂ taken by Miss C. E. Longfield at loc. D.

215. *Nymphidium lisimon platea* Westw. (1851).

Locs. D, three ♂ ♂; F, four ♂ ♂, two ♀ ♀.

216. *Nymphidium chione* Bates (1867).

Loc. F, one ♀.

217. *Nymphidium leucosia* f. *galactina* Stich. (1910-1911).

Locs. F, one ♂; I, four ♂ ♂, two ♀ ♀; J, one ♂; K, one ♀; L, one ♀.

218. ***Nymphidium baeotia* nivea subsp. nov.**

= Seitz' *Nymph. baeotia minuta*, "Macrolep.," v, p. 713 (1917).

The type of *minuta* Druce is from British Guiana and is a true *baeotia*.

Two ♀♀ taken by Miss C. E. Longfield at loc. F. Also in the Hill Museum from Cuyabá, three ♂♂, two ♀♀ (types).

Family LYCAENIDAE.

219. *Thecla marsyas* L. (1764).

Locs. C, two ♂♂; D, one ♂, two ♀♀.

220. *Thecla linus* Sulz. (1776).

Locs. A, one ♂; B, three ♂♂; H, one ♂; I, one ♂; J, one ♂; K, one ♂; L, one ♂.

221. *Thecla amyntor* Cr. (1779).

Loc. C, one ♂.

222. *Thecla floreus* H. H. Druce (1907).

Loc. D, one ♂.

223. *Thecla mutina* Hew. (1867).

Loc. F, one ♀.

224. *Thecla vibidia* Hew (1869).

Loc. C, one ♂.

225. *Thecla rustan* Stoll. (1790).

Loc. D, one ♂.

226. *Thecla cupentus* Cr. (1782).

Loc. I, one ♀.

227. *Thecla ocrisia* Hew. (1868).

Loc. J, one ♂.

228. *Thecla besidia* Hew. (1868).

Loc. C, one ♂.

229. *Thecla ericusa* Hew. (1867).

Locs. B, one ♀; D, one ♀.

230. *Thecla sophocles* Fab. (1793).

Loc. K, one ♀.

231. *Thecla syncellus* Cram. (1780).

Loc. I, one ♀.

232. *Thecla pion* G. & S. (1887).
Loc. F, one ♀.

233. *Thecla* **brasiliensis** sp. nov.

Allied to *minthe* G. & S. (1887), but is without the blue colour to the fore wing below.

♂. Upperside of a deeper blue and with broader black margins than in *minthe*. Fore wing with the androconial spot small and black.

Underside grey as in *minthe*, but with a slight brownish tinge except over the inner area of fore wing. Hind wing markings as in *minthe*, except that the first white submarginal line is indistinct, the red spot smaller, and the small black anal spot with a red spot above it.

Habitat.—Matto Grosso and Paraguay. Loc. C, 2 ♂♂ (type.) Also in B.M. from Sapucay, Paraguay, October 9, 1903, one ♂ collected by W. Foster.

234. *Thecla empusa* Hew. (1867).
Loc. L, one ♀.

235. *Thecla ophia* Hew. (1868).
Loc. D, one ♂.

236. *Thecla echion* L. (1767).
Locs. B, one ♂; C, three ♂♂; one ♀.

237. *Thecla cecrops beon* Cr. (1782).
Locs. C, two ♂♂; F, one ♀; I, one ♀; O, two ♂♂, one ♀.

238. *Thecla cyphara* Hew. (1874).
Locs. C, one ♂, one ♀.

239. *Thecla calor* H. H. Druce (1907).
Loc. C, one ♂.

240. *Thecla simaethis* Drury (1773).
Loc. B, one ♀.

241. *Thecla telea* Hew. (1886).
Loc. C, one ♂.

242. *Thecla cissura* Hew. (1877).
Locs. C, one ♀; D, one ♂; J, one ♀.

243. *Thecla mantica* H. H. Druce (1907)
Loc. F, two ♂♂, one ♀.

244. *Thecla celmus* Cr. (1779).
Loc. I, one ♂.

245. *Thecla phrutus* Hbn. (1832).
Locs. C, one ♂ ; D, one ♂ .

246. *Thecla cruenta* Gosse (1880).
Loc. C, thirteen ♂ ♂ .

247. *Thecla gamma* H. H. Druce (1909).
Loc. C, sixteen ♂ ♂ .

248. *Thecla azia* Hew. (1873).
Locs. C, nine ♂ ♂ ; E, one ♂ ; O, two ♂ ♂ .

249. *Thecla rufofusca* Hew. (1877).
Loc. B, one ♂ .

250. *Thecla syllis* G. & S. (1887).
Loc. D, one ♀ .

251. *Thecla valentina* Berg. (1896-7).
Loc. B, one ♀ .

252. *Thecla basalides* Hbn. (1837).
Loc. D, one ♂ .

253. *Thecla mulucha* Hew. (1867).
Loc. M, one ♀ .

254. *Thecla bubastus* Cr. (1782).
Locs. B, one ♂ ; D, one ♀ .

255. *Thecla cestri* Reak. (1866).
Locs. I, one ♀ ; J, one ♀ ; L, one ♂ .

256. *Thecla thius* Hbn. (1832).
Locs. D, one ♂ . Collected by Miss C. E. Longfield.

257. *Thecla tegaea* Hew. (1868).
Loc. M, one ♂ .

258. *Thecla taranea* Hew. (1868).
Loc. F, one ♂ . Collected by Miss C. E. Longfield.

259. *Hemiargus hanno* Stoll. (1790).
Locs. A, ten ♂ ♂ ; B, two ♂ ♂ ; D, two ♂ ♂ ; F, two ♂ ♂ , two ♀ ♀ ; H, two ♂ ♂ ; J, one ♂ .

260. *Hemiargus filenus* Poey. (1833).
Locs. B, one ♀ ; D, one ♂ ; F, one ♂ , one ♀ .

261. *Leptotes cassius* Cr. (1775).
Locs. A, three ♂ ♂ ; B, three ♂ ♂ ; E, one ♀ ; F, one ♂ , one ♀ ; G, one ♂ ; H, fifteen ♂ ♂ ; I, one ♂ ; J, one ♂ ; K, one ♀ .

ADDENDA.

262. *Heliconius melpomene burchelli* Poult. form **obscurifascia** f. nov.

♀. Differs in the almost complete absence of the yellow band on the hind wing, there remaining only a short dusted stripe beyond the cell, the remainder of the band being indicated by a shade. On the fore wing there is a well-marked yellow patch between the costal and vein 5 formed of two spots with also a minute one below vein 5. There is no yellow median stripe. The red band is much narrower and is reduced on its proximal edge below vein 4; its outer edge is more strongly indented than in the typical race.

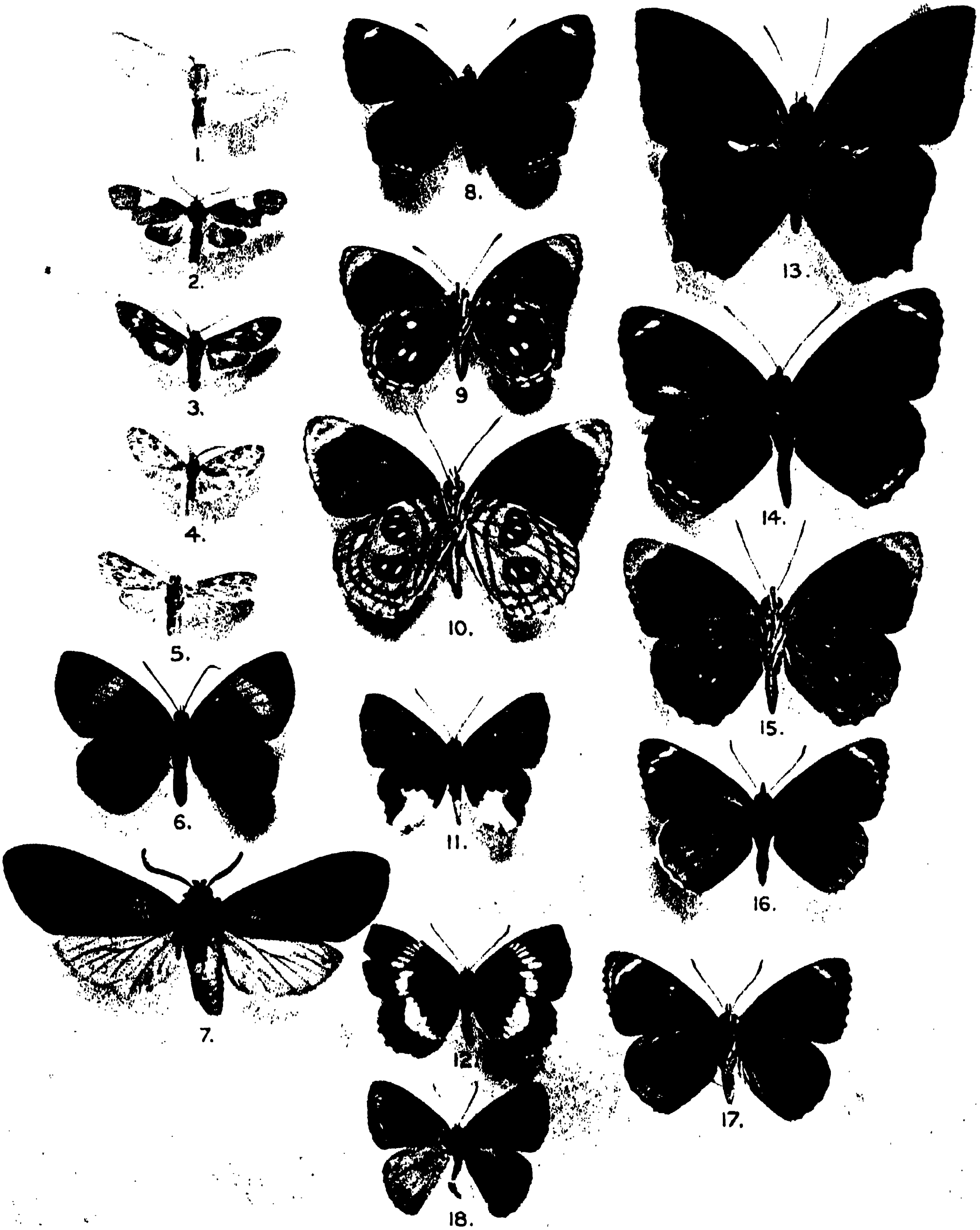
Habitat.—Melguira, 10 miles south of Diamantino, 2,000 feet, May 28, 1927. A single ♀ collected by Miss C. E. Longfield.

263. *Heliconius melpomene burchelli* Poult. form **curvifascia** f. nov.

♂. Partakes of the *penelope* and *amandus* characters. The fore wing and hind wing are as in *penelamanda* Stgr., except that there is no red in the cell of the fore wing, the band here being incurved as in the typical race. On the underside of the fore wing the band has the same form and is not sharply defined distally as in *penelamanda*.

In the absence of a figure this form is recognized by the hind wing pattern composed of a yellow discal band, well marked red rays, and some red at the base. The fore wing has a broad red band which does not enter the cell, a broad red median stripe, a narrow red and short submedian stripe, lower edge of cell edged by a yellow line, and a small yellow rectangular costal spot on the inner edge of the red band.

Habitat.—Melguira, 10 miles south of Diamantino, 2,000 feet, June 1, 1927. One ♂ collected by Miss C. E. Longfield.



LEPIDOPTERA FROM MATTO GROSSO.

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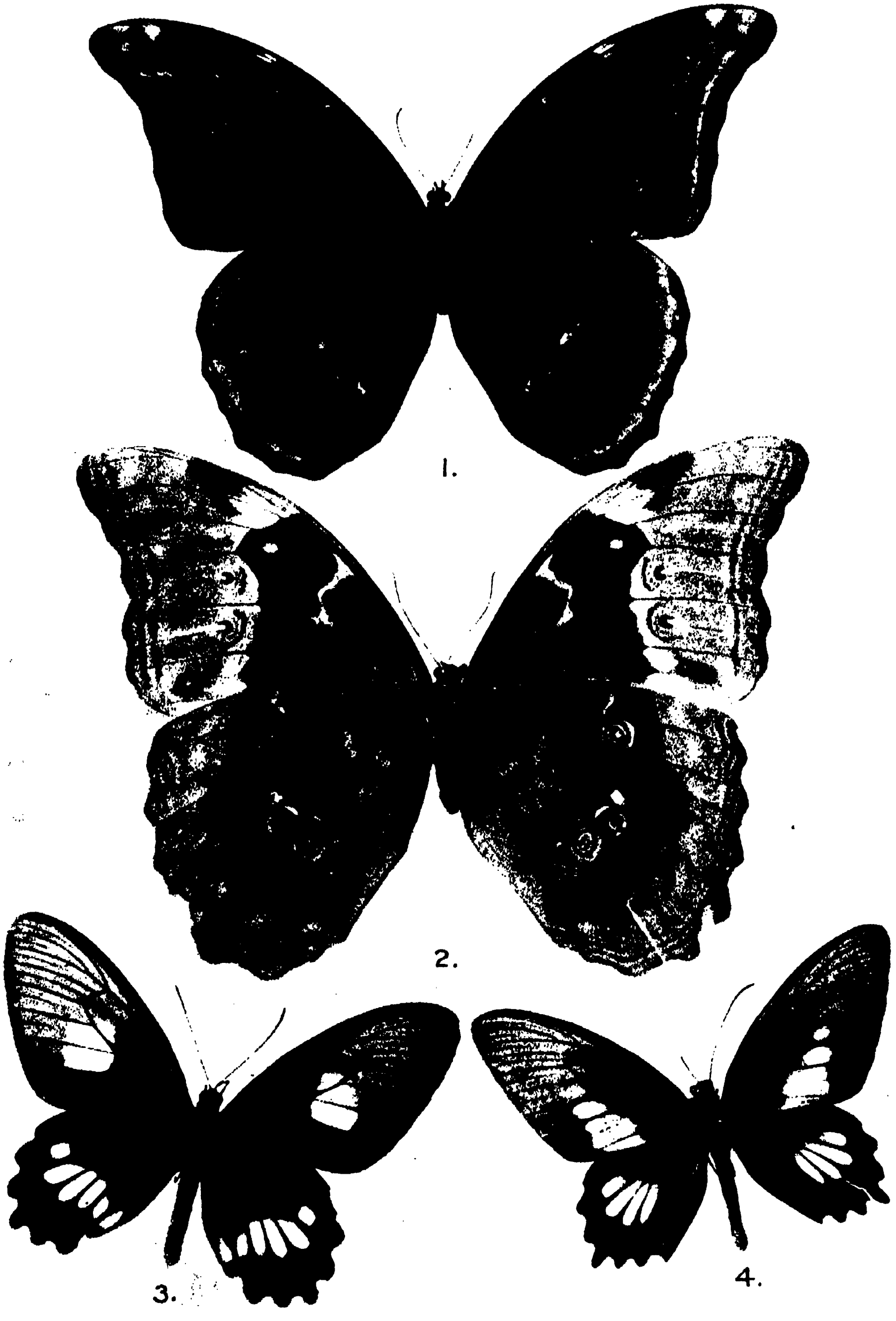
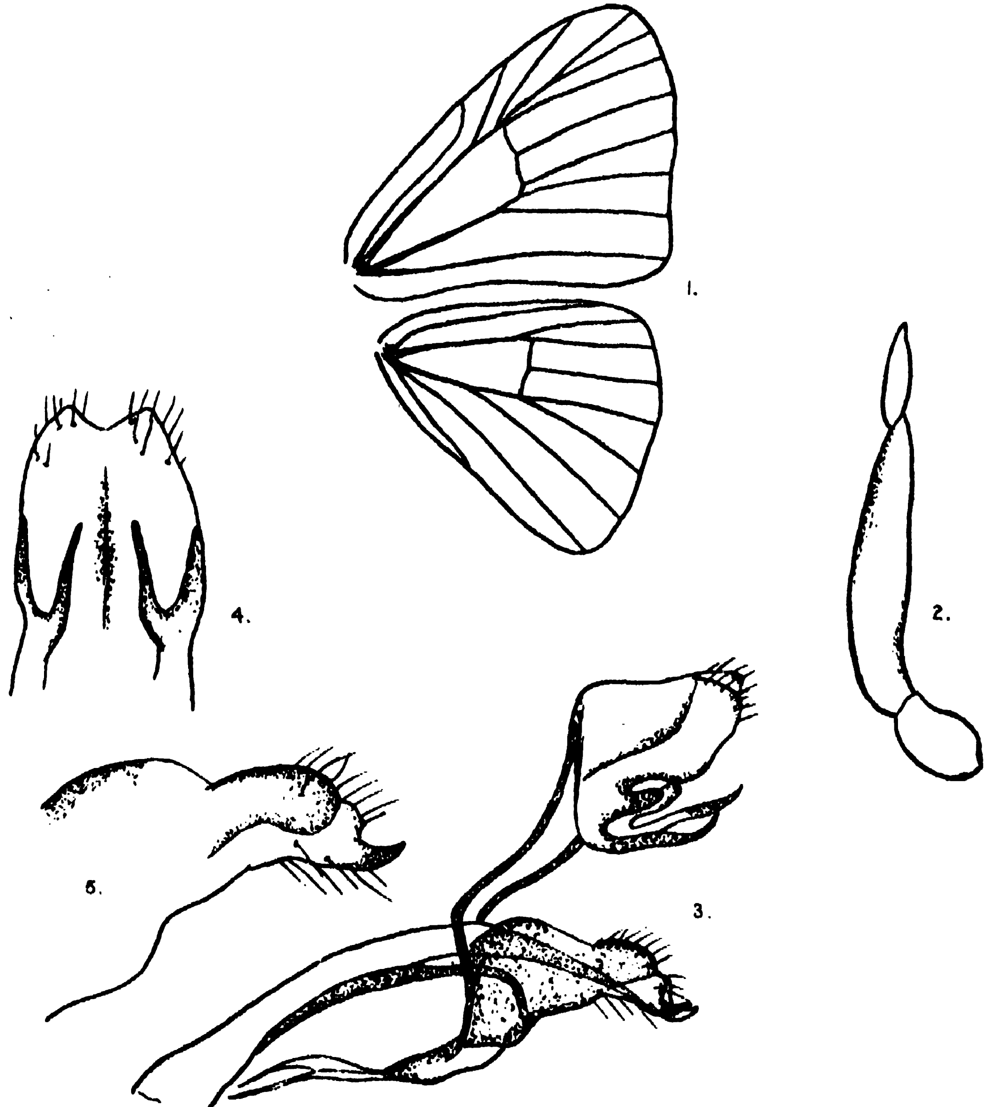


BUTTERFLIES FROM MATTO GROSSO



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STRUCTURE OF JOICEYA.

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SEVEN NEW FORMS OF DELIAS (LEP. PIERIDAE).

By G. TALBOT.

1. *Delias sanaca sanaca* Mrc. f. **confusa** f. nov.

This is the dark form of *sanaca* which has often been confused with *belladonna horsfieldi* Gray, which it closely resembles on the upperside.

Distinguished from the typical form by the black ground-colour occupying a greater area than the white colour, so that the white discal stripes and spots are much smaller on the upperside, and to a less extent reduced on the underside.

Described from a constant series of 6 ♂ ♂ from Mussooree, N.W. India, and one ♂ from Simla, 8,000 feet, in the Hill Museum.

2. *Delias belladonna* **kwantungensis** subsp. nov.

The specimens were collected by Herr Hone in South China near Canton, and were received from the firm of Staudinger and Bang-Haas.

It was conjectured that the true *belladonna* Fabr. came from South China, but it is certain now that this is incorrect. The specimens represent a race which approximates to *zelima* Mitis from Central and West China, and the single ♀ is quite unlike the figure in Donovan's Naturalist's Repository, pl. xxxv. The type figured by Donovan is quite unlike any *belladonna* form known. The spots are semi-hyaline, the yellow basal spot on the hind wing reaches to near the lower margin of the cell, the other spots are definitely rounded, including two yellow anal spots. The underside is described as being like the upperside except that there are two yellow basal spots; therefore the spots should be mostly white and there should be no cell-spot. Furthermore, the abdomen is laterally pale yellow, a feature which we have not seen in any species of the group. This curious form still remains to be rediscovered, and probably does not exist on the continental mainland, unless it came from South India. A race is known from Celebes, and it seems not unlikely that Borneo or the Philippines may yield the Fabrician insect.

It may be thought that the figure in Donovan, like so many in the older works, is a caricature. References to other figures in the same work should dispel any idea of this kind. We take the opportunity of noting that on pl. 47 is a figure of *Papilio* (*Agcronia*) *arethusa* Fabr., and no mention is made as to the origin of the specimen figured.

It represents a form of *arete* Doubl. but does not conform to the pattern of known races. Cramer's figure of *arete* must be taken as typical in the absence of any drawing of the type specimen which appears to be lost.

♂. Fore wing as in *zelima* Mitis. Hind wing with larger discal spots, and those in 4 and 5 are closer together than in *zelima*. Underside of hind wing with the submarginal spots smaller, the cell-spot smaller and the yellow anal area extending only slightly beyond the submedian fold. One ♂, without date, has smaller discal spots on the hind wing above.

♀. Hind wing above with discal spots larger than in *zelima*, the submarginal spots smaller than in this form. Anal area only slightly tinged with yellow. Hind wing below with the submarginal spots smaller than in *zelima*, discal spots larger, and those in 2 and 3 only slightly tinged with yellow.

Habitat.—Canton, May 2, 1924, one ♂ (type); March 27, 1924, one ♂; also two ♀ ♀ undated; March 31, 1823, one ♀ (allotype).

We are indebted to Herr O. Bang-Haas for the loan of the female which is placed in his own collection.

3. *Delias aglaia* siamensis subsp. nov.

It is curious how rare in collections are specimens of this species from Siam. By an oversight, I have stated in Mon. Delias, Part 1, p. 53, that the race *tonkiniana* occurs in Siam. One of the specimens on which this information was based was labelled Siam, but the place indicated is found to be in Tonkin. The other specimen obtained by the same collector, although labelled Bangkok-Xieng, was probably caught nearer Tonkin than Siam; we cannot trace the position of "Xieng."

♂. Differs from allied races as follows: Fore wing above with a broad and well-defined grey-white discal band, clearly defined on its outer edge and proximally suffused and mixed with black almost to the base. This band extends distad into cellule 3 and below this close to the submarginal spots. Submarginal spots larger. Hind wing with the discal band without any bluish-grey colouring. Submarginal spots rather large, the one in 2 tinged with yellow. Yellow area does not reach the cell.

Underside of fore wing with a narrow discal band and small submarginal spots, the subapical ones being dusted over. Hind wing with the yellow stripes narrow and dusted with black except in the anal area. Red subbasal band reduced, broken in the cell, and dusted with black below the cell.

♀. Upperside rather dark. Discal markings very slight. Hind wing with shadowy postdiscal stripes. Underside of fore wing with discal markings much reduced, cell-patch yellow; submarginal spots small. Hind wing with yellow stripes dusted with black as in the ♂. Red subbasal band narrow, but not broken.

Habitat.—Siam, one ♂, one ♀. Ex Coll. Schmidt, received from W. Niepelt.

4. *Delias mitisi* **banggaiensis** subsp. nov.

Specimens of this species from the small island of Banggai (Boongai, Bangkai, or Bangkei) are, like some other butterflies from this island, different to the forms found in the neighbouring Sula Islands and on the Celebes coast.

♂. Fore wing above with apical black area narrower, its inner edge extending to about half-way between the origin of veins 6 and 7, and but slightly beyond vein 2. Underside with smaller white submarginal spots. Hind wing below with much smaller red submarginal spots and a large orange anal patch which extends from the edge of the black distal area to the origin of vein 2, and from vein 2 to the inner margin. The two anterior white discal spots are a little smaller and the outer edge of the white discal area is not even, but is indented at the veins by the black ground-colour.

♀. Differs on the underside as in the ♂, the smaller red spots and large orange patch, being a conspicuously differentiating feature.

♂. Holotype in Coll. Hill Mus. ♀ Allotype in Coll. Berlin Mus. Also in Coll. Levick, ex Coll. Oberthur.

5. *Delias aglaia* L. (1758) **mera** subsp. nov.

This Luzon race is very close to *balabaca* Fruh. (1911), which is curious because between Luzon and Balabac is found the strongly differentiated race *pandecta* Stgr. on Palawan.

♂. Fore wing above as in *balabaca*, but with a slightly smaller patch in the cell, and with the discocellular spot not extended distad as in that form. Hind wing with the band only very faintly tinged with yellow on the inner margin. Discal spot smaller than in *balabaca*.

Underside of fore wing with discal band broader than in *balabaca*, and the postdiscal spots a little larger. Hind wing with yellow markings paler than in *balabaca*.

♀. Upperside with the hind wing darker than in *balabaca*. Markings of the underside as in the ♂ described above.

Habitat.—Philippines. Luzon: Baguio, 5,000 feet, ten ♂ ♂, four ♀ ♀ in the Carnegie Museum, Pittsburg (types); one ♂, one ♀, paratypes in the Hill Museum. Mindanao: one ♀ in Hill Museum.

6. *Delias levicki* Roths. (1927), **apoensis** subsp. nov.

This specimen is unique and unfortunately the greater part of the abdomen is missing. It was thought that it may possibly be a ♂, but upon making a careful exploration for androconia none could be found. As the general colouring and pattern of the underside is so similar to that of *levicki* we consider that *apoensis* represents a geographical race of that species. The locality given for *levicki* is *Mindanao*, but in this mountainous region the occurrence of a second race is not improbable.

♀. Upperside rather different from *levicki*. Fore wing with more extended white in cellules 2 and 3; the edge of the white area from vein 4 to the submedian fold is clearly, though not sharply, defined as it is here fused with the submarginal spots, one of which is indicated below vein 2 by some dark ground-colour proximally to it. The white area is extended beyond the end of the cell just as in *levicki*. The four subapical spots are placed farther from the margin than in *levicki*. Hind wing with the white proximal area as in *levicki*. The black distal area is much reduced by a series of five large triangular white marginal spots, the lower one in two and the anterior one in six partly joined to the white proximal area.

Underside of fore wing with the pattern of the upperside, the parts representing the dark areas being more or less dusted with yellowish-green. Hind wing yellowish olive-green as in *levicki*. A submarginal yellow line broken into lunules by the veins, and a small cream-coloured ovate spot on the lower discocellular which divides it. Subcostal red stripe broader than in *levicki*, cellule 8 yellow, veins not striped with white.

Habitat.—Mindanoo: Mount Apo, 6,000 feet, July 7, 1904, coll. Edgar A. Mearns, one ♀ in U.S. Nat. Mus. Washington.

I am indebted to Dr. W. Schaus for permitting me to describe this insect, and also for two excellent photographs which are to be reproduced in the monograph on Delias now in course of publication.

7. *Delias echidna* Hew. (1861) **ambonensis** subsp. nov.

♂. Upperside as in the typical form. Underside of fore wing with grey-white proximal half more extended along the inner margin. Hind wing with smaller submarginal spots; submarginal band broader, its inner edge placed nearer the cell.

♀. Upperside as in typical form. Underside of fore wing with submarginal spot in 4 minute. Yellow basal area extending well beyond vein 2. Hind wing with broader submarginal band and smaller submarginal spots.

Habitat.—Amboina, one ♂ in the Berlin Museum (type); one ♀ in Hill Museum, collected by J. C. Kershaw, January 1, 1909 (allotype).

NEW FORMS OF AFRICAN NYMPHALIDAE (LEP. RHOP.) IN THE MUSÉE DU CONGO, TERVUEREN.

By G. TALBOT.

THE types, unless otherwise stated, are in the Musée du Congo Belge, Tervueren.

1. *Charaxes hildebrandti* Dew. (1879) **katangensis** subsp. nov.

♂. White bands on both wings with only slight blue edging. Band of the hind wing slightly broader anteriorly. Underside pale, with paler yellow postdiscal spots which in the type are obsolete.

A slightly differentiated race of a somewhat variable species of which the Hill Museum possesses a series of ♂ ♂ from French Guinea, Cameroons, Northern Congo, and one ♀ from the Semliki Valley.

Habitat.—Katanga: Kinda, February 15, 1915, ♂ type, and a second ♂ taken on April 6, 1920, by F. G. Overlaet.

2. *Charaxes cynthia* Butl. (1865) **sabulosus** subsp. nov.

♂. Distinguished by its paler brown coloration on both sides. Fore wing above with the postdiscal brown band of spots continuous to cellule 7, the spots above vein 4 larger than in the typical form, and spots in 2 and 3 not invaded by the ground-colour. In the paratype the marginal spots are merged together to form a continuous broad marginal line. Band of the hind wing broader than in the typical form, being extended distad. Brown scaling in the cell more marked than in the typical form, and in the paratype the hind wing cell is strongly brown.

Underside with the dark brown markings obsolete and black spots smaller. In the paratype the dark brown markings are only visible in the basal area of fore wing. The white band on the hind wing is sharply defined along both its edges; in the paratype it only reaches to just below vein 2.

A well-defined race from the Katanga.

Type ♂ from Kinda, September 10, 1919, and one other from Thisbobe, September 25, 1921, both collected by F. G. Overlaet.

3. *Euphaedra spatiosa* Mab. (1877) **serena subsp. nov.**

♂. Fore wing above with the yellow band much narrower than in the typical form and scarcely reaching below vein 4.

Underside bluish-grey with a tinge of green, and much paler than in the typical form. Cell-spots one on each wing and reduced.

Fringes more strongly marked with white than in the typical form.

Habitat.—Katanga: Chibobe, October 10, 1915 (♂ holotype); Kinda, April 6, 1920, one ♂; Lenge, February 15, 1916, one ♂. All collected by F. G. Overlaet.

4. *Euryphene oxione* Hew. (1866) **squalida sp. nov.**

♂. Much darker on both surfaces than specimens from the West Coast. Not always darker above than some Cameroons specimens, but these are always paler beneath.

♀. More strongly marked on the underside than specimens from the West Coast and Cameroons.

Habitat.—N.E. Congo and Uganda. Holotype ♂ from Entebbe, July 7, 1900; ♀ from the Butahu River, Ruwenzori, South Semliki Valley, December, 1919, T. A. Barns. Also one ♂ from West Semliki Valley, June, 1924, T. A. Barns; three ♂♂, Semliki Valley; one ♀, Kondolola dist., Lindi Valley, 1,600-1,700 feet, May, 1921, T. A. Barns; one ♀, Ituri district, between Epulu and Ituri Rivers, March, 1920, T. A. Barns; seven ♂♂, Entebbe, Uganda. The above specimens in the Hill Museum. Also in Musée du Congo, one ♂ from Beni (Lt. Borgerhoff).

5. *Euryphene demetra* Godt. (1823) **obsolescens subsp. nov.**

♂. Upperside with the dark markings reduced and shadowy.

♀. Above brown, with apical area of fore wing blackish and traversed by a broad yellowish-brown subapical band which reaches below vein 4; apex broadly white.

Underside as in typical *demetra* but darker, especially over the distal areas. Band of fore wing whitish and not reaching below vein 4. Hind wing with large bluish-grey anal area, the discal band much widened posteriorly.

Habitat.—Cameroons: Bitye, Ja River, May 4, 1909, wet season, G. L. Bates, one ♂ (type) in Hill Museum. Congo: Dungu-Niangara-Doruma, 1912, Mons. Hutinan, one ♀ (allotype) and one ♀ from Stanleyville, M. H. Vermeulen, in the Musée du Congo.

6. ***Euryphene phantasia*** Hew (1865), ♀ form **paraceres f. nov.**

The upperside pattern strongly recalls *Euphaedra ceres* Fbr. Ground-colour bluish-black. Fore wing subapical band narrower than in typical ♀, yellow to white. A large yellowish-green median patch from cellule 2 to the inner margin. Hind wing mostly bluish-green with a large yellowish or whitish discal shade.

Underside yellowish-green. Fore wing with a short white subcostal bar. Hind wing with a subcostal white mark in 7, and no other markings.

In the specimen from the Uele, the subapical band on fore wing above is white and sharply-defined to vein 5, below which it is blue.

Habitat.—Congo. Type from the Kasai; also in Hill Museum from Lindi River, 1,700 feet, June, 1921, one ♀, T. A. Barns; and Lindi River, July, 1921, 2,000 feet, one ♀, T. A. Barns. Also one ♀ in Musée du Congo from the Uele de Greeff.

LEPIDOPTERA COLLECTED DURING A ZOOLOGICAL MISSION TO THE GREAT ATLAS OF MOROCCO, 1927.

BY F. LE CERF AND G. TALBOT.

(*Continued from the* BULLETIN OF THE HILL MUSEUM, *Vol.* II, *No.* 2, *p.* 121.)

MICROLEPIDOPTERA.

BY E. MEYRICK, B.A., F.R.S., etc.

THE following is a list of the Microlepidoptera taken by Messrs. G. Talbot and Le Cerf on their expedition to the Great Atlas in Morocco, all the material having been very kindly placed in my hands for study. I am not aware that any species of the group have been recorded from the region previously. Altogether forty-nine species have been determined; their geographical relations are of considerable interest, whilst two genera and twelve species are new to science.

PTEROPHORIDAE.

Trichoptilus siceliota Zell. (1847).

Tenfecht, 3,000-4,000 feet, April 30, 2 ex. (one normal, the other somewhat discordant and imperfect, but probably identical). I think *xerodes* Meyr. (1886) must be merged as a lighter geographical form of this species which thus ranges from South Europe throughout Africa to India and Australia.

Oxyptilus laetus Zell. (1847).
Arround, 6,000 feet, at light, May 30, 2 ex.

Alucita tetradactyla Linn. (1758).
Djebel Imress, 6,600, May 14; Tinmel, at light, May 19, 2 ex.

Alucita chordodactyla Staud. (1859).
Tinmel, at light, May 18-23, 5 ex.

Alucita probolias Meyr. (1891).

Tenfecht, 3,000-4,000 feet, April 30; Tafingoult, 3,000 feet, May 9; Tinmel, at light, May 22-23, 6 ex. I now determine *A. particiliata* Wals. (1907) from the Canary Islands to be a synonym of this; the larva feeds on Lavandula, as conjectured by Walsingham.

Alucita hesperidella Wals. (1907).

Tafingoult, 3,000 feet, May 9; Tinmel, at light, May 19-22, 12 ex. Described from the Canary Islands, and I think not hitherto recorded elsewhere.

Alucita spilodactyla Curt. (1828).

Tenfecht, 3,000-4,000 feet, April 30, 1 ex.; dark markings of fore wings almost obsolete, hardly traceable except a greyish blotch in dorsal cilia beyond cleft.

PHALONIADAE.

Euxanthis straminea Haw. (1811).

Arround, 6,000 feet, May 31, 1 ex.; large (21 mm.), with grey-whitish hind wings, but certainly this species.

TORTRICIDAE.

Tortrix fluxana Kenn. (1900).

Tinmel, at light, May 20, 1 ex.; a form in which the lower parts of basal patch and central fascia are confluent into a ferruginous patch.

Tortrix coriacana Reb. (1894).

Tinmel, at light, May 19, 3 ex.; the markings darker than in an example from the Canary Islands. Antennae ♂ strongly ciliated (nearly 2), a good specific character.

Cnephasia chrysanthemana Dup. (1842).

Arround, 5,400 feet, at light, May 29, 1 ex.

EUCOSMIDAE.

Gypsonoma aceriana Dup. (1842).

Tinmel, in valley of a stream, at light, May 18, 1 ex.

Gypsonoma minutana Hubn. (1800).

Tinmel, with the preceding, May 18, 1 ex.; similar to Algerian specimens.

Laspeyresia pomonella Linn. (1758).

Tenfecht, 3,000-4,000 feet, at light, April 30, 1 ex.

GELECHIADAE.

Isophrictis lineatella Zell. (1850).
Korifla, Rabat, June 17, 1 ex.

Isophrictis meridionella Herr-Schäff (1854).
Tinmel, at light, May 18-19, 8 ex.

Aristotelia inopella Zell. (1839).
Tinmel, in valley of a stream, at light, May 18, 1 ex.

Aristotelia **condensata** sp. nov.
♂, ♀, 13—14 mm.

Head, thorax white, somewhat speckled grey or dark fuscous. Palpi white, second joint dark grey except apex, terminal joint slightly sprinkled grey. Fore wings 7 and 8 out of 6; whitish, irregularly tinged grey and more or less sprinkled dark fuscous; stigmata represented by ill-defined oval spots of dark fuscous or blackish irroration; similar very ill-defined spots midway between plical stigma and base, beneath costa near base, the dark irroration sometimes tending to form groups round costa, apex, and termen: cilia whitish, some scattered blackish specks round apex and termen, especially near base. Hind wings grey or light grey; cilia light grey, base tinged ochreous.

Arround, 5,400 feet, May 29, 5 ex.

Gelechia plebeiella Zell. (1847).
Tinmel, at light, May 18, 4 ex.

Phthorimaea ocellatella Boyd. (1858).
Tafingoult, 3,000 feet, May 9; Tinmel, at light, May 20, 3 ex.

Stomopteryx **pelomicta** sp. nov.
♂, 12 mm.

Head, thorax whitish-ochreous-grey. Palpi whitish-grey, terminal joint white with strong black lateral lines. Fore wings 6 nearly approximated to 7 at base; whitish-grey-ochreous, irrorated grey; plical and second discal stigmata blackish; cilia whitish-ochreous-grey, a median line of blackish points. Hind wings termen strongly emarginate, apex long produced; pale grey; cilia whitish-grey-ochreous.

Tinmel, at light, May 20; 1 ex.

Sophronia semicostella Hubn. (1817).
Arround, 5,400 feet, May 29; 2 ex., worn.

Stibaromacha n. g.

Head with dense loosely appressed hairs; ocelli posterior; tongue absent. Antennae three-fourths, ♂ stout, serrulate, simple, scape moderate, without pecten. Labial palpi rather long, recurved, second joint much thickened with dense appraised scales, forming a short rounded tuft at apex beneath, terminal joint as long as second, rather stout, scaled, pointed. Maxillary palpi short, drooping, loosely haired. Posterior tibiae with dense long rather appressed hairs above. Fore wing 1 bifurcate, 2 and 3 stalked from angle, 7 and 8 stalked, 7 to termen, 11 from middle. Hind wing 1, trapezoidal-ovate, termen hardly sinuate, cilia four-fifths; without cubital pecten; 2—5 nearly equidistant and parallel, 6 and 7 long-stalked.

Stibaromacha ratella Herr-Schaff (1855) (*sericeella* Reb. 1917).

Sinis, 2,800 feet, at light, May 7; Tinmel, in valley of a stream, at light, May 18; 3 ex. This species has been placed in various genera, and latterly in *Symmoca*; it is, however, fully entitled to generic separation on characters as above.

Oegoconia quadripuncta Haw. (1828).

Tinmel, at light, May 19; 1 ex.

Symmoca sericiella Wals. (1904).

Tinmel, at light, May 20; 1 ex.

Symmoca candidella Chrét (1922) (= *nigricornella* Chrét. (1922).)

♂, 15—20 mm.

Head whitish-ochreous, towards sides suffused ferruginous-orange. Palpi ochreous-whitish, second joint more or less suffused ochreous, sometimes somewhat infuscated towards apex. Antennae somewhat stout, simple, dark grey. Thorax ochreous. Abdomen with bronzy-golden segmental bands. Fore wings elongate, brownish-ochreous: cilia concolorous. Hind wings dark grey; cilia light brownish, more or less suffused grey towards base.

♀, 17—23 mm.

Head and palpi as in ♂. Antennae slender. Thorax white. Fore wings costa somewhat more arched than ♂; whitish-ochreous to white; an oblique transverse ochreous mark on end of cell, often faint or obsolete; cilia white or whitish. Hind wings grey to whitish-grey; cilia whitish, towards base sometimes greyish.

Tinmel, at light, May 19-22; 37 ex., thirty ♂ ♂, seven ♀ ♀. Also 2 ex., from Tafingoult, 3,000-3,500 feet, May 9-10 (♂ normal,

♀ 27 mm., cilia of hind wings greyish). Redescribed, as Chrétien had only one example of each sex, and did not recognize that they belonged to the same species.

Symmoca **gypsomorpha** sp. nov.

♂, 19—23 mm.

Head ochreous-whitish, face and sides of crown suffused ferruginous-ochreous. Palpi whitish, second joint greyish-ochreous except apex. Antennae simple, grey. Thorax white or ochreous-whitish. Fore wings elongate, white or ochreous-whitish; cilia whitish-ochreous. Hind wings grey; cilia ochreous-whitish, tinged grey towards base.

Tenfecht, 1,500-3,000 feet, April 30; 2 ex.

Symmoca uniformella Reb. (1900).

Tinmel, at light, May 18; Arround, 6,000 feet, at light, May 30; 2 ex.

COSMOPTERYGIDAE.

Stagmatophora teucrii Wals. (1907).

Tinmel, at light, May 18-19; 2 ex.

OECOPHORIDAE.

Pleurota protasella Staud. (1883).

Tinmel, at light, May 18-23; 17 ex.

Pleurota bicostella Clerck (1761).

Tinmel, at light, May 22-23; 2 ex. (♂, ♀).

Depressaria nervosa Haw. (1812).

Djebel Likoumt, 7,000-8,500 feet, June 6; Djebel Tachdirt, 6,800 feet, at light, June 7; 2 ex. These are in very fresh condition, as though recently emerged, and suggest seasonal habits specially modified by the climate.

ORNEODIDAE.

Orneodes desmodactyla Zell. (1847) (?).

Tinmel, at light, May 19; 1 ex., apparently of this species, but too much damaged for certain identification.

SCYTHRIDAE.

Scythris acanthella God. (1824).

Taroudant, April 25; Tenfecht, 3-4,000 feet, April 30; Tafingoult, 3,000 feet, May 9; Djebel Tachdirt, 6,700 feet, at light, June 6; 7 ex.

Scythris **albiflua** sp. nov.

♂, 14—18 mm.

Head, thorax light greyish-ochreous. Palpi greyish. Abdomen whitish-ochreous, anal tuft large, dense ochreous. Fore wings white or grey-whitish; a broad suffused grey costal stripe from base to two-thirds; sometimes a suffused grey blotch on base of dorsum almost confluent with this; a rounded triangular grey blotch on dorsum beyond middle, its apex suffused dark fuscous, forming an obscure spot, a grey spot above its posterior extremity or sometimes some grey suffusion extending in disc towards costal streak; second discal stigma forming a small dark fuscous spot; beyond this some irregular grey suffusion crossing wing before apex, its outer edge strongly convex; cilia grey, more or less white suffusion at apex of wing. Hind wings 4 absent, 3 and 5 connate; grey; cilia pale greyish-ochreous.

Tinmel, at light, May 19-22; 6 ex. Allied to *S. acanthella*.

HYPONOMEUTIDAE.

Xyrosaris **scambota** sp. nov.

♂, 13—14 mm.

Head, palpi, thorax white finely irrorated grey. Fore wings costa slightly bent at two-fifths, with some slight raised scales; whitish-grey, scales finely darker-tipped; two or three obscure small dots of blackish irroration on costa anteriorly, slight elongate marks at two-fifths and three-fourths, and a small cloudy spot on middle of dorsum; a distinct raised black dot above tornus, some slight brownish tinge beneath this; from above this to costa before apex a very oblique blackish-grey shade: cilia grey, round apex and on costa irrorated blackish-grey, before and beyond costal end of dark shade more or less suffused white. Hind wings grey; cilia light grey.

Tinmel, at light, May 20; Arround, 5,400 feet, May 29; 2 ex. Allied to *X. restrictella* Chrét., which, though described as a *Paradoxus*, is doubtless (I have not seen it) referable to *Xyrosaris*.

COLEOPHORIDAE.

Coleophora spissicornis Haw. (1828).

Arround, 5,400 feet, May 29; 1 ex.

Coleophora charistis sp. nov.

♂, 17 mm.

Head, thorax white. Palpi white, second joint with rough projecting scales at apex, terminal joint two-thirds. Antennae white, ringed dark fuscous, scape with long pale ochreous tuft. Fore wings pale yellow-ochreous; extreme costal edge dark grey on basal half; on basal fourth a very fine white costal line beneath this, thence a moderate white costal streak attenuated to five-sixths, slenderly edged with grey beneath towards extremities; a white streak from middle of disc to termen, downwards sinuate, finely attenuated anteriorly, broader posteriorly and extending along upper half of termen to apex; a narrow white posteriorly attenuated streak along fold throughout; a white dorsal line from base to near middle of wing: cilia whitish-ochreous, becoming white on costa anteriorly, a white bar at apex. Hind wings grey; cilia pale greyish-ochreous.

Arround, 5,400 feet, May 29; 1 ex. This would probably be attached to one of the *Leguminosae.*

Coleophora vicinella Zell. (1849).

Tinmel, at light, May 19-20; 3 ex.

Coleophora conyzae Zell. (1868).

Tinmel, at light, May 18; 1 ex.

PLUTELLIDAE.

Cerostoma cellulosa sp. nov.

♂, ♀, 19—20 mm.

Head, palpi, thorax grey suffusedly irrorated whitish, tuft of palpi very long. Fore wings very elongate, apex pointed, produced, termen very obliquely sinuate; whitish-grey (each scale a grey or dark speck very finely edged white, resembling minute cells), scattered black scales or minute dots on veins; an irregular dorsal streak of darker suffusion from base to tornus, occupying nearly one-third of wing, a whitish dot or short white dash sometimes indicated on middle of its upper edge; a very small black dot on end of cell; sometimes some darker suffusion along costa beyond middle, or in disc towards termen: cilia grey, an irregular series of white specks preceded by black specks. Hind wings light grey, terminal edge dark grey; cilia pale grey.

Tinmel, at light, May 20; 4 ex.

Plutella maculipennis Curt. (1831).

Tinmel, Arround (5,400 feet), Djebel Tachdirt (6,800 feet), May, several examples.

TINEIDAE.

Myrmecozela ochraceella Tengst. (1847).
Tinmel, at light, May 19-23 ; 3 ex.

Myrmecozela affinitella Reb. (1900).
Tinmel, at light, May 19 ; 1 ex.

Tinea fuscipunctella Haw. (1828).
Tinmel, at light, May 20 ; 1 ex.

Tinea **hirundinea** sp. nov.
♂, 13—19 mm.

Head ochreous-whitish. Palpi lilac-grey. Antennae over 1, rather stout, ochreous-whitish. Thorax dark purple-grey. Abdomen greyish. Fore wings rather narrow, 7 and 8 usually stalked; glossy purple-grey, sometimes with slight brassy gloss; cilia grey-whitish. Hind wings light grey; cilia grey-whitish.

Tenfecht, 4,000 feet, April 30 ; Sinis, 2,800 feet, May 5 ; Tizi N'Test, 6,000 feet, May 11 ; Tinmel, May 18-23 ; at light, 39 ex., all ♂ ♂.

Omichlospora n. g.

Head loosely rough-haired; ocelli posterior; tongue absent. Antenae three-quarters, ♂ simple, scape moderate, without pecten. Labial palpi moderate, porrected, with appressed scales, second joint with several apical projecting bristles, terminal joint somewhat shorter than second, obtuse-pointed. Maxillary palpi long, several-jointed, folded, filiform. Posterior tibiae with long hairs appressed above, loose beneath, metatarsus spinulose beneath. Fore wings 1, bifurcate, 2 from angle, 6 and 7 stalked, 7 to costa, 11 from towards base. Hind wings 1, ovate-lanceolate, cilia over 1; 2-7 separate, 6 to costa. Ovipositor ♀ very long, stout, exserted.

Nearest in structure to *Coniastis*, in which genus the antennae ♂ have very long ciliations, and veins 5 and 6 of hind wings are stalked.

Omichlospora **incertula** sp. nov.
♂, ♀, 8—9 mm.

Head ochreous-whitish, frontal tuft sometimes more yellow-ochreous, suffused blackish towards base. Palpi dark fuscous, apex of joints yellow-whitish. Antennae yellow-whitish ringed dark fuscous. Thorax whitish speckled fuscous. Fore wings rather elongate-lanceolate; lilac-grey-whitish, speckled dark fuscous throughout; cilia ochreous-whitish, speckled dark fuscous. Hind wings light grey; cilia ochreous-grey-whitish.

Tinmel, at light, May 17-22; 15 ex., all more or less imperfect, but naturally a very obscure insect.

Eumasia communita sp. nov.

♂, 9 mm.

Head, thorax ochreous-whitish, some fuscous suffusion on shoulder. Palpi whitish, terminal joint dark fuscous except apex. Antennae serrulate, ciliations 1. Fore wings ochreous-whitish, scattered dark fuscous scales; markings dark fuscous; a small spot on base of costa; a spot on costa near base, touching or connected with another beneath fold rather beyond it; a rather narrow somewhat oblique fascia at two-fifths, constricted or slenderly interrupted in disc; a small transverse mark on costa beyond middle; an irregular transverse fascia about two-thirds, with anterior projection in disc; a spot on costa towards apex, one at apex, and two smaller on termen: cilia ochreous-whitish. Hind wings whitish-grey; cilia grey-whitish.

Tafingoult, 3,000 feet, May 9; 1 ex.

NEPTICULIDAE.

Trifurcula immundella Zell. (1839).

Tenfecht, 3-4,000 feet, April 30; 1 ex.

CORRIGENDA TO PART II.

Page 113.—The account of previous records of Moroccan Geometridae is unfortunately not quite complete, as we had overlooked an article by Lord Rothschild, "List of the Lepidoptera collected April to end of June, 1925, by E. Hartert and F. Young in Morocco," *Bull. Soc. Sci. Maroc*, v (7-8), pp. 324-345, erroneously dated December 31, 1925, published in October, 1926, but not received at the Hill Museum nor in my own library. Pages 341-43, numbers 96-110 deal with Geometridae and include some records for the Great Atlas, showing *Sterrha oranaria* B. Haas, *Orthonama obstipata* Fb. and *Pythanosis henricaria* Oberth. to be new neither for the country nor for the Great Atlas.
L. B. P.

For the reason given above, the asterisk should be deleted in the case of the following: p. 104, No. 35; p. 105, Nos. 41 and 43.
G. T.

LIST OF ARCTIIDAE AND AMATIDAE COLLECTED BY C. L. COLLENETTE IN MATTO GROSSO, BRAZIL. WITH DESCRIPTIONS OF SOME NEW FORMS.

By G. TALBOT.

ALL types are in the Hill Museum, Witley.

LIST OF LOCALITIES.

B. Urucum, 15 miles south of Corumbá, April 17-30, 1927.
F. Melguira, 10 miles south of Diamantino, 2,000 feet, May 23 to June 3, 1927.
G. Tombador, 16 miles south of Diamantino, 1,500 feet, June 4-6, 1927.
I. Tombador, 16 miles south of Diamantino, 1,500 feet, August 1-27, 1927.
K. Burity, 30 miles north-east of Cuyabá, 2,250 feet, July 1-14, 1927.
L. Burity, 30 miles north-east of Cuyabá, 2,250 feet, September 6-30, 1927.
M. Burity, 30 miles north-east of Cuyabá, 2,250 feet, October 1-22, 1927.
O. Mutum, 20 miles west of Porto Suarez, Bolivia, November 7-14, 1927.

Family AMATIDAE.

1. *Pheia albisigna* Walk. (1854).

Loc. L, one ♀ at perspiration in garment hung on tree.

2. *Cosmosoma teuthras erubescens* Butl. (1876).

Locs. L, seven ♀ ♀ ; M, fourteen ♀ ♀ ; O, one ♀, all at perspiration ; between Corumbá and Cuyabá, at light on River, May 3-7, 1927, one ♀.

3. *Cosmosoma restrictum* Butl. (1876).

This distinct form has the appearance of being a separate species.

Loc. M, two ♂ ♂, one ♀ at perspiration.

4. *Psilopleura* **scripta** sp. nov. (pl. viii, fig. 3).

♀. Allied to *vittata* Walk. (1864), and distinguished by much reduced hyaline markings on both wings. Antennae black-brown, anteriorly marked with white above and also at the base. Palpi (second and third segments) and head blackish-brown, first segment of palpus yellowish-white below; collar orange and with a patch of this colour on back of head; thorax blackish-brown irrorated with smoky-grey; abdomen blackish-brown with a lateral orange stripe and a sublateral yellowish-white stripe; pectus grey-white; legs blackish-brown.

Wings blackish-brown with hyaline markings. Fore wing with a short elongate spot below the cell, and a short streak below it; two small spots in the middle of the cell; a post-discal band of four small spots in 6-3, the two lower ones placed more distad, the last spot sagittate; at the apex three obscure smoky-grey marginal marks indented proximally and followed by a smoky-grey undulate marginal line.

Hind wing with discal patch not entering the cell but filling the bases of cellules 2 and 5; a pale area below the cell. Underside of both wings yellow at base and along inner edge of hind wing.

Length of fore wing: 15 mm.

Habitat.—Mutum, 20 miles west of Porto Suarez, 1,500 feet, Bolivia, November 7, 1927, one ♀ at light.

5. *Psilopleura vittata* Walk. (1864).

Loc. O, four ♂ ♂ at perspiration.

6. *Eurota histrio* Guér. (1844).

Loc. B, two ♀ ♀ at light.

7. *Macrocneme cyanea* Butl. (1876).

Loc. K, one ♀ at perspiration.

8. *Chrysostola tetrazona* Hmpsn. (1898).

Loc. I, one ♂ on damp sand at night.

9. *Episcepsis gnoma* Butl. (1877).

Loc. I, one ♂, differing from typical specimens in that the marks on the head are yellow, and the hair in the fold of hind wing more yellow than white. Taken at perspiration.

10. *Ceramidia casa* Hbn. (1827).

Loc. F, one ♀ taken on damp sand at night

11. *Ceramidia cataleuca* Butl. (1876).

Loc. M, one ♂ at perspiration.

12. *Aclytia heber* Cram. (1780).

Loc. M, one ♂, two ♀ ♀ at perspiration.

13. *Heliura rhodophila* Walk. (1856).

Loc. M, one ♀ at perspiration.

14. *Eucereon* **mediocris** sp. nov. (pl. viii, fig. 4 ♂, 5 ♀).

Allied to *ladas* Schs. (1892), but is smaller and the abdomen is without spots or bands.

♂. Fore wing grey with fuscous markings. Veins striped with fuscous, a spot at base below cell, a large rounded spot in middle of cell, a discocellular spot, an obscure discal band, a narrow post-discal band, a strongly dentate marginal line angled at the veins, inner margin marked with fuscous. Hind wing fuscous, paler proximally, and with an anal patch of raised grey-white scales; fringe grey-white. Underside with fewer markings.

Antennae, head, palpi, thorax, abdomen and legs fuscous; abdomen tinged with yellow laterally and with pale yellow anal tuft; third segment of palpus darker than the others; back of head with a yellow tinge. Hind wing with a moderate anal lobe.

♀. Similar to the ♂, larger, and without the anal patch of scales on the hind wing.

Length of fore wing: ♂, 11 mm; ♀, 12.5 mm.

Habitat.—Tombador, 1,500 feet, August 25, 1927, one ♂ on a tree trunk by day (type); Burity, 2,250 feet, September 23, 1927, one ♀ at human perspiration in a garment hung on a tree.

15. *Eucereon sylvius* Stoll. (1790).

One ♀ taken at night on river steamer between Corumbá and Cuyabá, May 3-7, 1927.

16. *Eucereon maia* Druce (1884).
Loc. B, one ♀ taken in house during rain.

Family ARCTIIDAE.

17. *Robinsonia banghaasi* Roths. (1911).
Loc. B, two ♀ ♀ at light.

18. *Aphyle* **flavicolor** sp. nov. (pl. viii, fig. 1).

Unlike any known species in the genus and distinguished by its unmarked yellow fore wings. Belongs to Hampson's Sect. ii.

♂. Antennae yellowish-brown; palpi black, yellowish below on the inner side; head and thorax citron-yellow, pectus whitish; legs yellow, tarsi and fore femora marked with black-brown; abdomen yellowish-brown, paler at the base.

Fore wing pale yellow. Hind wing white, slightly tinged with yellow, some pale yellow hair in the anal area, and fringe pale yellow, underside paler.

Length of fore wing: 15 mm.

Habitat.—Burity, 2,250 feet (September 30, 1927) (♂ type), also 7 others in September and October, all at light.

19. *Eupseudosoma nivea* f. *florida* Grote (1882).
Loc. G, one ♀ at light.

20. *Ammalo insulata* Walk. (1855).
Loc. B, one ♂ at rest on a leaf.

21. *Pelochyta arontes* Stoll.
Loc. L, one ♀; M, one ♀, both at perspiration.

22. *Elysius* joiceyi sp. nov. (pl. viii, fig. 7).

♂. Antennae blackish-brown strongly pectinated; palpi crimson, 3rd segment mostly blackish-brown; head and collar crimson; tegulae and thorax above crimson mixed with black-brown; pectus crimson; femora crimson; tibiae crimson on the inside and black-brown on the outside; tarsi black-brown. Abdomen above orange-yellow with black bands, the hair on the basal part of dorsum crimson; ventral surface and anal tuft crimson.

Fore wing indian red densely striated transversely with black. A large subbasal patch of pale buff extending from the costal vein to the submedian and slightly curved, traversed by many reddish-brown striae. A small similarly coloured patch near the end of the cell; basal tuft crimson.

Hind wing pink. Fore wing below crimson, slightly irrorated with brown over the apical area. Hind wing crimson with black-brown irroration along the costa and outer margin to vein 2, the veins remaining crimson; discal area whitish.

Length of fore wing: 29·5 mm.

Habitat.—Burity, 30 miles north-east of Cuyabá, 2,250 feet (October 2, 1927), at light in original forest. A single ♂.

This is a very distinct species but may be placed near *conjuncta* Roths. (1910) on account of the abdominal coloration, but the antennae are more strongly pectinated.

23. *Elysius superba* Druce (1884).
Loc. B, one ♂ at light.

24. *Opharus basalis* Walk. (1856).
Loc. M, two ♂ ♂ at perspiration.

25. *Opharus astur* Cram. (1779).
Locs. L, five ♀ ♀; M, one ♂, four ♀ ♀; all at perspiration.

26. *Psychophasma erosa* H.-S. (1858).
Locs. L, twenty-three ♂ ♂; M. twenty-one ♂ ♂; all at perspiration.

27. *Virbia subapicalis* Walk. (1854).
Loc. L, one ♂.

28. *Belemnia eryx* Fabr. (1775).
Loc. M, one ♂ at light.

29. *Pseudalus aurantiaca* Roths. (1909).
Locs. L, one ♂; M, one ♀, both at light.

30. *Diacrisia intricata aculmena* Berg. (1882).
Loc. M, one ♂, at light.

31. *Ecpantheria abdominalis* Walk. (1864).
Loc. O, one ♂ at light.

32. *Tesselota sertata* Berg. (1882).
Loc. B, one ♂ at light.

33. *Calidota similis* Hamp. (1901).
Loc. L, two ♂ ♂ at perspiration.

34. *Paranerita sithnides* Druce (1896) **disjuncta subsp. nov.** (pl. viii, fig. 2).

♂. Antennae and frons more red than in the typical form; palpi with the middle segment less strongly darkened below at its apex. Thorax, legs and abdomen as in the typical form.

Fore wing above dragon's-blood red, and therefore lighter than in the typical form. The yellow costal band does not reach the outer margin but is separated from the marginal patch, either extending well into cellule 2 or only into cellule 3. Hind wing proximally more darkened than in the typical form.

Habitat.—Mutum, 20 miles west of Porto Suarez, 1,500 feet, Bolivia, November 7-14, 1927, three ♂ ♂; Urucum, 15 miles south of Corumbá, 650-900 feet, April 21, 1927, three ♂ ♂ (type); November 17, 1927, one ♂. With the exception of the type specimen taken at light in original forest, all were taken at human perspiration in a garment hung on a tree.

35. *Utetheisa ornatrix* L. (1758).
Locs. B, three ♀ ♀; J, one ♂, two ♀ ♀; K, one ♂; L, one ♀; taken mostly flying by day, but 3 specimens were taken at light and one at perspiration.

NEW AND LITTLE-KNOWN GEOMETRIDAE FROM NORTH CELEBES.

By LOUIS B. PROUT.

Among a small but extremely interesting consignment of Geometridae from North Celebes (mostly Minahassa district) recently received by the Hill Museum from Mr. P. J. Van Den Bergh, I find a number of new species and races, besides hitherto unknown sexes of rarities, which merit early attention ; I have therefore brought them together in the present paper. The collection also includes a ♂ of my recently published *Problepsis achlyobathra* (Bull. Hill Mus., ii, p. 47, Sumatra), in which I can detect no racial variation, and a few probably new races which must await more extensive material. All types are in the Joicey Collection.

1. *Agathiopsis basipuncta* Warr. **leptocosma** subsp. nov.

♂, 39—43 mm.

Distinguishable by its small size and reduced markings, fore wing with subapical patch rather dark, its diameter on R^2 only 2·5 mm., tornal patch small, containing little or scarcely any black-grey maculation, the area between these two patches almost entirely without brown irroration, though with distinct dots on the veins, hind wing with the outer band generally narrow.

Four ♂♂.

2. *Gelasma subannulata* Prout ♀.

Nov. Zool. xxiii, p. 205 (1916) ♂ (North Celebes).

♀, 40 mm.

Palpus with terminal joint short.

Slightly larger and ampler-winged than the ♂, fore wing with termen slightly better curved. Much less yellow (more glaucous) than the unique ♂ type, in which, however, discoloration had probably taken place ; costal edge of fore wing bright ochreous ; fringes cinnamon-buff or pinkish cinnamon.

Two ♀♀ neallotype and another.

3. *Ourapteryx* **versuta** sp. nov.

♂ ♀, 52—56 mm.

Face white, with narrow dark band above. Palpus white beneath and at tip, otherwise blackish on outerside, with some ochreous-brown shading. Vertex with thorax and base of abdomen above pale yellow; body otherwise white. Legs white, foreleg in part ochreous-orange, all tibiae and tarsal segments with some black and ochre at extremities; hind tibia in ♂ strongly dilated, spurs short; tarsal spinules rather strong.

Fore wing with apex not falcate, termen not strongly oblique, in ♂ almost straight, in ♀ very slightly curved anteriorly, then straight; SC^1 arising from C, anastomosing strongly with SC^2, which is from cell; sulphur-yellow, as in *sambucaria* Linn. (1758); costal edge narrowly white, with blackish dots (not strigulae as in *sciticaudaria* Walk., 1862); lines and cell-mark scarcely so dulled as in *sciticaudaria* nor so clean as the lines of *sambucaria*; the lines rather broad, antemedian strongly oblique, postmedian slightly less so; distal area with some slight and scattered grey strigulae, as in *sambucaria*; termen and fringe as in *sciticaudaria*.

Hind wing with the tail at R^3 short, the prominence at R^1 fairly broad; DC very oblique; white costally, the rest concolorous with fore wing; M^1 bright buff or ochreous, radials and M^1 in part tinged with the same; the oblique median line following the entire length of DC$^{2-3}$, then ceasing; postmedian slighly sinuous posteriorly, often weak or obsolescent, following the course of that of *podaliriata* Guen. (1858); a spot in anterior part of tail bright red-brown, proximally shaded with grey, a vague grey terminal spot just behind tail; some dark strigulation in this area, some terminal white in tail and posteriorly; fringe as on fore wing.

Underside creamy-white, very faintly marked.

Two ♂♂, four ♀♀.

Evidently nearer to *podaliriata* than to the yellow species, in spite of the entirely different shape and colour. A ♀ labelled "Amboina" in the Tring Museum has long been known to me, but I always doubted the locality. Two examples of the Celebean *Buzura nephelistis* Meyr. are labelled Amboina in the same handwriting.

4. *Myrteta ocernaria* Swinh. **eumytha** subsp. nov.

♂, 42 mm.

Fore wing with costal margin more broadly brown than in *o. ocernaria* Swinh. (1893), the shading reaching the cell and just crossing the stalk of SC^{3-5}; all the lines accentuated except the terminal, which instead of being blackish is much paler brown than the fringe. Hind wing similarly modified as regards the lines, the thickened postmedian and strong subterminal particularly noticeable.

One ♂.

Notwithstanding the lack of confirmatory material it seems safe to assume this to be a valid race. In the single example, SC^1 of fore wing anastomoses at a point with SC^2, in *o. ocernaria* generally more strongly; but constancy in this respect is scarcely to be expected.

5. *Hypocrosis* **brachygenyx** sp. nov.

♀, 35—41 mm.

Group of *festivaria* Fabr. (1794). Head and body concolorous with wings, the abdomen with faint olive-grey dorsal cloudings.

Fore wing cream-colour or cream-buff, except around the green patches very densely irrorated or entirely suffused with brownish vinaceous and with deep violet grey, the latter colour forming slight strigulae in places; extreme costal edge orange-buff; the patches Lincoln-green to dusky olive-green; first patch on its proximal side similar to that of *agalma* Prout (1922), but with a narrow extension to the costa, in cell narrower than in that species (measuring about 3·5 mm.), the "chin" on M^2 quite blunt, the recession from this to the fold about 1·5 mm., or only half as long as in *agalma*; distal spot much as in *agalma*.

Hind wing with costal region broadly yellow as in the allies, its tone varying from capucine-yellow towards ochraceous-buff; the rest concolorous with fore wing, the green patch at abdominal margin similar to that of *agalma*, varying individually.

Underside slightly duller than zinc-orange, the markings indicated (on the hind wing weakly) in grey.

Two ♀♀.

Almost certainly conspecific with *agalma*, in spite of the nearly unicolorous face, unblackened tergum, differently coloured wings and differently shaped proximal patch of fore wing. But until the group is thoroughly revised it is impossible to say which is the oldest name of the collective species to which it should be assigned, and it is better in the interim to let it stand alone.

6. *Luxiaria* **molesta** sp. nov.

♂, 41 mm.

Face fuscous, with lower edge and cone pale. Head and body concolorous with wings. Abdomen with weak dark spots posteriorly on first four tergites. Antenna simple. Hindtibial dilation moderately strong. Fore wing shaped about as in *hyalodela* Prout (BULL. HILL MUS., ii, p. 61), vinaceous-buff or avellaneous, tinged with fawn, scarcely differing from the ground-colour of *hyalodela* but with weaker grey suffusion; lines clearer brown, the median slightly more dentate, both this and the postmedian bent at R^1, so as to reach the costa slightly more proximally; dark vein-dots of postmedian not intense.

Hind wing shaped almost as in *hyalodela*, but with the teeth at R^1—M^2 slightly less strong; hyaline basal patch almost as strong; colouring as on fore wing; cell-dot small (in *hyalodela* fairly large); median deeply indented between the radials; postmedian rather nearer to it than in *hyalodela*.

Underside light pinkish-cinnamon, almost entirely clouded over, except between the median and postmedian lines, with vinaceous-cinnamon; markings indistinctly darker, much less grey than those of *hyalodela;* distinguished from those of that species as above.

One ♂.

Perhaps a race of *hyalodela*. A form, however, which I take to be *molesta* ♀ (two specimens) is more decidedly different from that sex in *hyalodela;* apart from the characteristic distinctions in the lines it shows, especially on the underside, much sharper colour-contrasts, the area between median and postmedian lines being whitish, the distal area beneath forming a more or less bright band (Mikado-brown in one specimen, nearer to cinnamon in the other), with the dark lines relatively weak but with apex of fore wing and irregular border of hind wing white—scheme of ♀ *submonstrata* Walk. (1861).

7. *Luxiaria amasa* Butl. **noda** subsp. nov.

Coloration above almost exactly as in *a. fulvifascia* Warr. (1894). Fore wing with the space between antemedian and median lines dark-clouded, median line more distally placed than in any known example of *a. fulvifascia*, the succeeding pale band consequently narrowed, distal area with the dark cloudings weak. Hind wing with termen not crenulate, pale postmedian band narrowed, distal cloudings weak. Underside with less sharp colour contrasts than in *a. fulvifascia*, the pale band narrowed, apical spot of fore wing reduced and less clear, postmedian vein-dots on fore wing sharply expressed.

One ♂.

On account of the hind wing shape this may prove a separate species, but the general agreement with *amasa fulvifascia* is so close that I can scarcely think so.

8. *Semiothisa nora* Walk. **clasma** subsp. nov.

♂, 42 mm.

Fore wing with white apical and midterminal patches above and beneath, the midterminal triangular, measuring 2 mm. from its base to its apex.

One ♂.

9. *Cleora* **praïa** sp. nov.

♂, ♀. 42—45 mm. Head whitish, tinged with light brown. Palpus moderate, terminal joint small. Antenna of ♂ bipectinate in proximal half, the branches very long and lax, curling about the shaft. Thorax white, in the ♂ mixed with brown above; abdomen white. Fore and middle legs fuscous-brown. Hindtibial pencil of ♂ whitish.

Fore wing shaped and marked almost as in *concentraria* Snell. (*Tijd. v. Ent.*, xx, p. 40, t. 3, f. 20); SC^1 and SC^2 both free; fovea not highly specialized; white with some brown admixture (stronger in the ♂♂) and scattered dark irroration; antemedian line rather markedly indented at fold (as in some *concentraria*); postmedian more dentate, at least in anterior half, than in that species; the former accompanied proximally, the latter distally, by sayal-brown or snuff-brown shades; distal shades grey, with the whitish central spot blurred; termen and fringe normal.

Hind wing much as in *concentraria*, distinguishable at once from that of *decisaria* Walk. (1866) by the shorter and much less conspicuous raised white scale-patch end of cell.

Underside distinguishable from that of *concentraria* by the smaller cell-spots, notably on the hind wing, and the narrower dark border, that of the fore wing fairly strong, 3·5 mm. wide anteriorly, tapering posteriorly, scarcely developed behind M^2, the contained white spot not very sharp, that of the hind wing narrow and shadowy; postmedian of hind wing rather less bent than in *concentraria*.

Two ♂♂, two ♀♀.

10. *Medasina strixaria* Guen. **celebensis** subsp. nov.
♂ 73-74 mm.

Less yellowish brown than *s. strixaria* Guen. (1858, India) being more heavily irrorated and clouded with deep brown and fuscous. Fore wing with the postmedian only feebly dentate on M^1, a conspicuous and distally rather well defined dark band (a little deeper than Hay's brown or Natal brown), outside the postmedian from R^2 hindward, averaging 3 mm. in width. Hind wing with the cell-spot somewhat elongate, the fuscous clouding strong proximally (excepting the basal pale mark) and again more or less strong, though more mixed with brown, between this and the subterminal; median line rather firm, blackish. Underside considerably darker than in *s. strixaria*, though with the same pale terminal markings.

Two ♂♂ (type and paratype) agreeing with the above descriptions, together with a dwarfed aberration (66 mm.) with rather lighter coloration on the fore wing above, though with the band outside the postmedian quite characteristic.

11. *Medasina* **vandenberghi** sp. nov.
♂, 41—43 mm.; ♀, 45—46 mm.

Head pale brown, with fuscous admixture, particularly on upper part of face and on occiput. Palpus longish, 2nd joint heavily scaled on outer side blackish, terminal joint rather long, exposed, smooth, slightly fusiform. Antenna in ♂ to slightly beyond middle with uniseriate pectinations, which are long from the 2nd to nearly the 30th joint, thence regularly diminishing; of ♀ simple. Pectus and femora rather strongly hairy; hind tibia of ♂ with moderate hair-pencil; abdomen of ♂ not hairy beneath. Body above sepia (lighter in the ♀), beneath much paler and more drab; ill-defined paired blackish dorsal spots generally observable on proximal segments.

Fore wing with termen very little oblique, more recalling in shape some *Arichanna* (e.g. *albovittata* Moore) than a typical *Medasina*, though still shorter, and with more waved termen; venation typical (SC^1 out of C, not touching SC^2); fovea strong; variable, the pale buff or whitish buff ground-colour almost entirely irrorated or clouded with blackish-grey and ochraceous-orange, the resultant tone perhaps best described as sepia; cell-spot large, black about as in *Arichanna biquadrata* Warr.; median area 5 or 6 mm. wide at costa, 3 or 4 at hindmargin, with less of the orange scales than proximal and distal areas, edged proximally by a slender (sometimes obsolescent) sinuous pale line, and distally by a more conspicuous one, which in one ♂ and two ♀ ♀ is expanded into a narrow band (in one of the ♀ ♀ more buff and reaching a width of 2 mm.) with straightish or little sinuous proximal edge and irregular, interrupted (subpunctiform) dark line near its distal edge, representing the postmedian, variable in its course, but usually incurved between R^3 and SM^2; a broad, irregularly clouded area between postmedian and subterminal, the cloudings generally darkest against the latter; subterminal white, lunulate, sometimes strong, at fold inbent and generally thickened; terminal area pale mixed; termen with dark lunules between the veins; fringe dark grey, with pale line at base.

Hind wing with termen strongly crenate; concolorous with fore wing; cell-spot small, at scarcely two fifths; second pale line or band and postmedian continued, the latter in middle of wing, somewhat dentate, very variable, generally markedly incurved between R^3 and SM^2; outer area as on fore wing, but the subterminal not thickened at fold.

Underside paler, more drab, with a broad darker, browner band between postmedian and subterminal; black cell-spots strong, other markings of upperside indicated but weak.

Six ♂ ♂, three ♀ ♀.

A striking novelty, forming a new section of the genus, probably ultimately a new genus.

A NEW CEYLONESE NOCTUID.

By Miss A. E. PROUT.

Mudaria fisherae sp. nov.

♂, 53 mm.

Face with a conspicuous horizontal plate (not or scarcely trilobate); antenna practically simple; wings with the termen crenulate.

Head and patagia snuff-brown (Ridgway, pl. xxix); thorax and tegulae creamy-white, the thorax more or less irrorated with snuff-brown. Abdomen discoloured (pale brownish ?).

Fore wing with the proximal third, large discal and apical patches and the outer lines white, almost entirely overlaid with olive-buff (l.c. pl. xl), the wing between the lines whitish at middle; remainder of wing russet (l.c. pl. xv); subbasal line obsolescent; antemedial more distinct from SC to hindmargin, black, bordering the large basal pale patch, strongly excurved from SC to SM^2 and angled outward before hindmargin; discal pale patch irregular, only separated in the cell from the basal patch by the (broad) black antemedial line, ending at M and with a blackish shade behind it to middle of median area, then forming a deep lobe posteriorly along origin of M^2, slightly bent inward at end of cell and obliquely cut away from upper angle of cell to about middle of costa; stigmata almost obsolete, lost in the olive-buff shade, which is deeper here than on the basal and apical pale patches but has a white line round it and leaves the narrowed area between costa and SC almost pure white; there is some russet irroration on the lobe of this patch and (more weakly) at middle and near its proximal edge; a white bar behind R^1 from the pale patch to the postmedial line, which is minutely dentate, oblique and slightly excurved from costa to R^2 (or R^3 ?), inwardly oblique to middle of fold, angled outward on SM^2; subterminal line weakly waved, broadened and pure white in fold; apical pale patch extending to R^2 between the outer lines, slightly interrupted at the subterminal (especially at costa), only reaching SC^5 on termen, the fringe olive-buff at apex.

Hind wing whitish, weakly irrorated with fuscous to SC and R^1, with weak, diffused discal spot. Fore wing beneath whitish, strongly irrorated with fuscous, paler beyond subterminal line, with slight, diffused discal spot.

Habitat.—Ceylon, Kandy, December, 1927—February, 1928, one ♂.

Notwithstanding the minor differences noted above *fisherae* seems quite clearly to be congeneric with *M. cornifrons* Moore, Indian Museum Notes, iii, p. 69 (1893) (Bengal), which has a somewhat similarly shaped discal patch.

DESCRIPTIONS OF SOME INDO-AUSTRALIAN NOCTUIDAE.

By Miss A. E. PROUT.

Collected for Mr. J. J. Joicey by Messrs. C., F., and J. Pratt, in the Mountains of Sumatra.

(*Continued from* The Bulletin of the Hill Museum, Vol. II, Pt. 2, p. 176.)

38. *Ericeia* **korintjiensis sp. nov.**

♂, 52—58 mm.

Antenna ciliate to about two-thirds, the ciliation scarcely as long as diameter of shaft, each segment with a weak bristle on each side. Hind tarsus hairy above, the hair long to the end of segment 4, slight on segment 5; fore tarsus with a small tuft on the proximal third of segment 1; midtarsus hairy on segment 1; this tarsal hair seems to have a good deal of significance in the genus *Ericeia*. Wings shaped somewhat as in *gonioptila* A. E. Prout, Bulletin of the Hill Museum, I, p. 233, pl. xxi, fig. 2 (1922) (Cent. Ceram), but fore wing slightly broader, hind wing less distinctly bent at R^3. Coloration about as in *gonioptila*, but the termen of both wings more noticeably pale; markings nearly as in *gonioptila*, but the inner lines typically weaker, the subterminal more darkened throughout but with the dark markings before and behind SM^2 less conspicuous, the medial and postmedial lines less oblique between $SC^{3\cdot4}$ and R^2.

Hind wing and underside nearly as in *gonioptila*.

♀, 54 mm.

Strongly resembles ♀ of *gonioptila*, but is rather darker and more drab, with the medial shade and subterminal line better defined, the latter with a pale distal edge (especially on hind wing), rather more evenly waved than in *gonioptila*, in which species the line is often hardly traceable.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂ ♂, one ♀; North Korintji Valley, 5,000 feet, September-October, 1921, two ♂ ♂.

This may be the Sumatra race of *gonioptila*, but *gonioptila* has the first segment of the fore tarsus and segment 5 of the hind tarsus more strongly hairy, as well as differing somewhat in shape from *korintjiensis*.

39. *Ericeia* rectifascia sp. nov.

♂, ♀, 44—47 mm.

Antenna almost serrate, with long, fasciculate bunches of cilia, about 1½ length of diameter of shaft, extending to about two-thirds, succeeded by bristles and minute ciliation. Hind tarsus hairy on segment 1 only; fore and mid tarsi glabrous.

Fore wing of medium breadth, with the termen nearly erect, little curved, the apex acute but not falcate; termen of hind wing anteriorly curved, posteriorly flattened, entirely without angulation at R^3. Ground-colour tawny-olive (Ridgway, pl. xxix), very nearly as in the ♀ of *albiangula* Saalm. (which Hampson has erroneously sunk to *sobria* Wlkr.), but somewhat darker than in the form figured by Saalmüller ("Lep. Madag.," fig. 223); strongly resembles *albiangula* ♀ also in the markings, but the subterminal band is slightly broader (distinctly broader than in Saalmüller's figure) and is even straighter both on the fore and on the hind wing; the bluish-white subapical mark on the fore wing is only present in the ♀ of *rectifascia*, which has also a fine, faint bluish-white line distally edging the subterminal and is a little deeper and richer in the tone of fore wing than the ♂ and has a row of interneural white marginal spots, conspicuous on the fore wing, minute on hind wing; all these pale markings are wanting in the ♂. Paler and greyer beneath than above, the fore wing slightly tinged with tawny-olive, especially on the subterminal area, the hind wing almost without markings in the ♂ (except a faint discal spot), with a fairly well-defined, pale-edged, dentate subterminal shade in the ♀.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂ ♂, one ♀. A single ♂ from Tosari, Java, July 6, 1910 (Dr. E. A. Cockayne), kindly presented to the Joicey Collection by the discoverer, does not appear to differ. A ♂ from Mt. Gedeh, 4,000 feet (G. Overdijkink), seems slightly darker but nearly agrees with typical *rectifascia*.

40. *Hulodes* **angulata** sp. nov.

♂, 74—79 mm.

Differs from *H. caranea* Cr., "Pap. Exot.," pl. 269, E.F., with which it appears hitherto to have been confused, in the rather smaller size, the slightly narrower and more elongate fore wing, and, especially, in the shape of the hind wing, which is more strongly produced at R^3, rather more strongly angled at R^1 and distinctly more rounded off at the apex than in *caranea*, giving the wing a longer and narrower appearance.

Coloration much as in *caranea*, but the dark tones a little richer and darker and the terminal area (except some slight dark irroration at termen) whiter than in the majority of *caranea* specimens, strongly contrasting with the rest of the wing. On the hind wing the subterminal line is noticeably bent inwards to tornus—forming, together with the shape of the hind wing, the easiest method of distinguishing *angulata* from *caranea*.

♀, 78—84 mm.

Distinguished from the ♀ of *caranea* by the subterminal line of hind wing above (as in the ♂) and by the shape of the hind wing, which is more strongly angled at SC^5, R^1 and (especially) at R^3 than in ♀ *caranea*.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, two ♂ ♂, one ♀; slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♀. Also in the Joicey Collection from the Malay Peninsula, Singapore, Borneo and Benkoelen, S. W. Sumatra. Occurs with *caranea* in the Malayan subregion.

angulata appears to agree structurally with *caranea* except in the shape of the hind wing, in which the difference seems very constant in both sexes.

41. *Ischyja inferna* Swinh. **achysis** subsp. nov.

♂, 86—92 mm.

Averages a little darker in tone than typical *inferna*, *Ann. Mag. Nat. Hist.* (7), x, p. 498 (1902) (Kina Balu), with the blue band on the hind wing a trifle broader and deeper in tone; but chiefly differs on the underside of hind wing, which lacks the white suffusion, having simply a pale line, much as in *manlia*.

♀, 99—108 mm.

Ground-colour generally rather darker (more fuscous) than in typical *inferna*, especially on the hind wing; the blue band of the hind wing usually a little broader.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, three ♂♂, four ♀♀; North Korintji Valley, 5,000 feet, September-October, 1921, two ♂♂, two ♀♀; Barisan Range, western slopes, 2,500 feet, October-November, 1921, three ♂♂. Specimens apparently agreeing with the above are before me, in the Joicey Collection, from Benkoelen, "Central Sumatra," Malay Peninsula (Province of Wellesley); Philippines (Mindanao), and from Aru Is. The last-named (a single ♂) is a small, rather pale specimen which may prove to belong to yet another race.

A ♂ and ♀ from Celebes agree on the underside with the typical (Borneo) form.

It seems to have been previously overlooked that *inferna* differs from the typical group of *Ischyja* species in the neuration of the ♂ hind wing, where R^3 and M^1 separate rather gradually at about (or scarcely) one-half from the cell, M^2 diverging very gently from *before* the division of R^3 and M^1; in *manlia* and the majority of other ♂♂, R^3 and M^1 approximate to well *beyond* one-half, curving apart rather suddenly, and M^2 separates in an abrupt curve from M^1 at nearly one-third *beyond* the separation of R^3 and M^1. In both forms the neuration appears very constant.

42. *Ischyja* manlioides sp. nov.

♂, 87—91 mm.

Extremely close in coloration and pattern to *inferna*, from which it differs chiefly in neuration (see below), and in having the reniform less acutely pointed and (distally) less produced at its anterior end; underside as in *inferna achysis*. Both these forms are at once separable from *manlia* by the absence of black shading in the cell of fore wing—which is always well defined in *manlia*, never more than a slight shade in the other two species—and by the shape of the reniform, the distal edge of which is more or less evenly incurved in *manlia*, produced to a point before R^2 in *inferna* and *manlioides*. Both the latter species also normally differ from *manlia* in the broader blue band of the hind wing, which is more evenly curved on its proximal edge.

♀, 103—104 mm.

Ground-colour much more greyish-brown than in either *inferna* or *manlia*, tinged with tawny-olive (Ridgway, pl. xxix), especially on the pale distal area; reniform very faintly defined, shaped much as in the ♂. Hind wing much as in *inferna achysis*, but the pale line on underside a little further removed from the termen.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, two ♂♂, two ♀♀. One ♂ in the Joicey Collection from Sarawak, a ♀ from Province of Wellesley, and three ♂♂ from Lebong, Sumatra, appear to belong here.

Neuration as in *I. manlia*.

43. *Ischyja* **gynnis** sp. nov.

♂, 91—94 mm.

Coloration and general scheme of pattern much as in *manlia* Cr., with which it agrees on the *fore wing* in the sharply-defined black patch in cell, but this is obliquely cut off at the distal end; the reniform is more oval than in *manlia* (except for a flattening at M); the redder proximal area ends at a curved line behind proximal edge of reniform, and is well defined by a yellow half-band, followed by a large patch of pale yellow thickly irrorated with black. On the *hind wing* the blue band is broader and less violet in tone than in typical *manlia*, with its proximal edge slightly and evenly curved; the yellow and black dashes on abdominal margin are more oblique than in *manlia*.

♀, 102 mm.

Rather darker and duller in tone than in *manlia* ♀.

Both sexes beneath have the pale line on the hind wing less strongly waved than in *manlia*, and on the fore wing it is less angled inward behind R^1. In the ♂ the thickening of the line on the fore wing begins behind R^1 (not behind R^2, as in *manlia*), and the line is much thickened on the hind wing, with some pale irroration on the medial area.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, two ♂♂, one ♀.

Differs from all other species of the *manlia* group yet known to me in the shape and neuration of the ♂ hind wing, which is broad, with the termen evenly curved and with the neuration as in a normal ♀. Antenna as in *manlia*. ♀ hind wing a little broader and more rounded than in any other of the *manlia* group of ♀♀ known to me.

44. *Iontha* **acerces** sp. nov.

♂, 64—66 mm.

Palpus with segment 3 a little shorter than in *umbrina* Dbld., *Entomologist*, 1, p. 298 (1842) (Sylhet), more distinctly thickened at tip; antenna, head, legs, thorax and abdomen much as in *umbrina*, with the exception of the anal tuft, which is much shortened, about half the length of the tuft in *umbrina*, compact, without the appearance of being cleft down the middle.

Fore wing a little broader than in *umbrina*, deep brownish-drab (Ridgway, pl. xl), with some violet-white irroration. Lines very indistinct, the antemedial proximally broadly defined by raw sienna shaded with burnt sienna, from M to the hindmargin; postmedial similarly defined from costa to behind R^1, and with a buff-yellow spot (Ridgway, pl. iv) between M^1 and M^2, the line itself represented by more or less distinct white spots on the veins, outwardly oblique from costa to R^1, thence almost parallel with the termen; the violet-white irroration predominant at termen and on fringe.

Hind wing differs from *umbrina*, both in shape and neuration (see note below); somewhat greyer in tone than the fore wing, with slight, waved, dark postmedial line, dotted with white on the veins on posterior half of wing; terminal pale irroration broadening towards tornus.

Wings beneath with dark lunules on the discocellulars, and with traces of a postmedial line with white spots on the veins, except on posterior half of fore wing; hind wing strongly irrorated in parts with violet-white.

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, two ♂♂.

Differs considerably from *I. umbrina* in the shape and neuration of hind wing, which is only slightly angled (not distinctly produced) before tornus, with R^1 downcurved and slightly further removed from SC^2 than in *umbrina*; R^2 very weak, from well before angle of cell, towards termen closely approximated to R^3, which is strongly upcurved; M^1 thickened, slightly downcurved, widely removed from R^3; M^2 strongly downcurved at its origin; abdominal margin rounded and clothed with a dense tuft of hair.

45. *Batracharta* **chariessa** sp. nov.

♂, 43 mm.

Very near to *cossoides* Walk., *Journ. Linn. Soc.*, vi, p. 196 (1862) (Sarawak) and *irrorata* Hmpsn., "Moths of India," ii, p. 444 (1894)

(Manipur), which may well belong to one collective species, in which case *chariessa* would stand as *cossoides chariessa.* From *cossoides* ♀ it differs in the following points; the ♂ is unfortunately not before me for comparison.

Fore wing above more suffused with pinkish than in *cossoides*, the wing a little more elongate (but this may well be sexual); the dark terminal markings about R^2 and M^2 almost obsolete and the terminal line much weaker; the teeth on postmedial line rather shorter and blunter than in *cossoides*, the line entirely interrupted at M (more as in *irrorata*); hind wing beneath evenly darkened except at margins (about as fore wing) with the discal spot rather smaller than in *cossoides*. On the upperside *chariessa* is nearer to a Khasias ♂ of *irrorata* in the Joicey Collection, though the basal area appears less strongly darkened and the teeth on postmedial line are blunter and broader than even in *irrorata*; but from *irrorata chariessa* is distinguished by the rather narrower hind wing and by the uniformly darkened underside, the hind wing beneath in *irrorata* being creamy-white, almost entirely without dark irroration, though with a very large dark discal spot, and the fore wing being creamy-white at costa and termen, with only slight dark irrroration.

Habitat.—Barisan Range, western slopes, 2,500 feet, October-November, 1921, one ♂.

46. *Homodes vivida* lassula subsp. nov.

♂, ♀, 37—38 mm.

Differs from typical *vivida* Guen., "Spec. Gén. Lép.," vi, p. 280 (1852) (Bombay), chiefly in the larger size and the less reddish (paler orange) tone of colour; the raised metallic spots appear rather weaker in the Sumatra subspecies and the costa of fore wing is hardly as broadly darkened, though the diffused, blackish medial shade—which is the distinguishing feature of *vivida*—is quite as strong in *lassula* as in the typical subspecies.

Habitat.—Barisan Range, western slopes, 2,500 feet, October-November, 1921, one ♂.

As this single ♂ is in poor condition, with the wings badly torn, the above description is taken mainly from a single ♀ from Lebong Tandai, Benkoelen, which will stand as the type of *lassula*; but as the Barisan ♂ seems to agree perfectly with the Benkoelen ♀ the species may fairly be included in this paper.

47. *Athyrma* **mixosema** sp. nov.

♂, 45 mm.

Antenna bipectinate to fully two-thirds, the apical third clothed with fine bristles and minute ciliation; the pectinations nearly twice as long as in *A. pratti* Beth.-Bak., *Nov. Zool.*, xiii, p. 262 (1906) (Brit. New Guinea), more as in *eupepla* A. E. Prout, BULL. HILL MUSEUM, i, p. 448, pl. xv., fig. 9 (1924) (S.W. Sumatra), from which the latter species differs in the following points.

Hind wing with a raised scar on vein R^1 (which appears weak); this scar is much more noticeable above than beneath; in *eupepla* R^1 of the hind wing is normal.

Markings of fore wing somewhat as in *eupepla*, but the dark patches (especially the distal one) greatly reduced, the area between the two patches being widened; medial dark bar at costa rather longer and more oblique than in *eupepla*; postmedial line rather more remote from termen, greatly narrowing the postmedial dark patch, which is proximally angled at middle (but not definitely indented) and ends as a broad bar on M^2 instead of being produced to a point on SM^2; medial area without the green suffusion of *eupepla*.

Underside of hind wing with the postmedial line obsolescent except from M^2 to near tornus.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♂.

48. *Pseudozalissa incertissima* Beth.-Bak. **diversisigna** subsp. nov.

♀, 41 mm.

Differs in the following points from typical *Bagada incertissima* Beth.-Bak., *Nov. Zool.*, xiii, p. 209 (1906) (Brit. New Guinea) = *Euplexia multicolor* Warr., *Nov. Zool.*, xix, p. 23 (1912) (New Guinea), figured Seitz' "Macrolep.," xi, pl. XVII *l*.

Fore wing rather less variegated with greenish, especially about tornus, where the green shade is replaced by purplish-grey; orbicular much reduced in size (or showing only the central shading); reniform greenish, kidney-shaped, with scarcely any trace of the horizontal white bar (which seems constant in all New Guinea specimens); the white apical patch is present and extends to R^3, only interrupted by some slight olivaceous subterminal suffusion and a small dark patch at termen between R^1 and R^2.

Hind wing much paler than in typical *incertissima*, almost white except on the distal third, where there is a darker terminal shade (narrowing to tornus), shading gradually into the white ground-colour. On the underside of hind wing the dark shade is only present as an apical patch and along termen, fading out about the medials.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, one ♀.

Warren has a subspecies *ochrea* of his *multicolor*, from Penang, Seitz' "Macrolep.," xi, p. 145, but from this *diversisigna* is entirely distinct. In *ochrea* the tornal area of fore wing is pale buff, but little darker than the apical area, and the stigmata are nearly as in typical *incertissima*, though the horizontal pale bar is shorter; on the hind wing subspecies *ochrea* is a little paler than in the typical subspecies, but the proximal half is not whitish, as in *diversisigna*; in *ochrea* the hind wing beneath is nearer to *diversisigna* than to typical *incertissima*, but there is some slight buff androconia (apparently overlooked by Warren) on the anterior part of wing from costa to SC, not extending to base or termen.

In this collective species vein R^2 of the hind wing is strong for a trifid, weak for a quadrifid, which no doubt accounts for the widely different positions assigned to it by different authors. Its true position is still uncertain. Hampson places *incertissima* in *Pseudozalissa*.

49. *Othreis* **abathyglypta** sp. nov.

♂, ♀, 97—110 mm.

Palpus golden-yellow, with some greyish scales on outer side; head and thorax dove-grey shaded with green; abdomen above bright golden-yellow, with the dorsal rough hair on basal segments pale chocolate-brown; pectus, legs and abdomen beneath predominantly bright yellow, the hair on fore and mid tibiae greenish, the fore and mid tibiae with a single, conspicuous white spot at about one-third and one-fourth respectively from the femoro-tibial joint.

Fore wing above citrine to orange-citrine (Ridgway, pl. IV), striated in parts with pale chocolate; ante- and postmedial lines deeper chocolate (the latter rather darker than the former), the antemedial from costa at about 8 or 9 mm. to about 5 mm. hindmargin, where it is usually obsolescent, the postmedial very oblique (and slightly incurved on posterior half), from the very acute apex to hindmargin at about 16 or

17 mm. from base; there is usually a faint pale shade on distal side of antemedial and on proximal side of postmedial; the brown striation often indicates a double, distally oblique medial line at costa, which sometimes reappears behind M^2, near to and parallel with the postmedial; there are usually also faint traces of an inner medial (or outer antemedial) line nearly parallel to the true antemedial but slightly converging towards it at and near hindmargin; nearly erect brown streaks on terminal area from the postmedial line at about SC^5 and R^1, and a slight streak from M^2 (beyond postmedial line) to tornus; there is often also a slight dark mark on distal edge of postmedial between R^2 and R^3; in the ♀ the termen is broadly and semicircularly whitish from M^1 to tornus, there is a small white spot on proximal edge of postmedial line between M^1 and M^2, and the subterminal is indicated by pale spots in the interspaces between R^1 and M^1.

Hind wing bright golden-yellow with bright patches somewhat as in *Adris tyrannus* Guen., " Spec. Gén. Lép.," vii, p. 110 (1852) (Central India), but the subterminal patch much broader (especially about R^1, R^2), the inner patch also rather broader (especially on posterior half), its distal edge less indented at M^2.

Underside nearly as in *tyrannus*, but showing a tendency to broader dark areas, especially on the hind wing.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, twenty ♂ ♂, one ♀; North Korintji Valley, 5,000 feet, September-October, 1921, twenty-two ♂ ♂, one ♀.

Abathyglypta may be no more than a local race of *Adris sikkimensis* Btlr., *Ann. Mag. Nat. Hist.* (6) xv, p. 126 (1895) (Darjeeling), from which it differs chiefly in the slightly shorter concavity along hindmargin of fore wing and, in the ♂, in the much less strongly tufted third segment of palpus. Hampson apparently uses this tuft as the chief generic distinction between *Othreis* and *Adris*; in *abathyglypta* the ♂ seems to belong to *Othreis* and the ♀ to *Adris*, so it is probable that the name *Adris* may have to sink to *Othreis*.

50. *Othreis* **bathyglypta** sp. nov.

♂, 92—100 mm.

Head vinaceous-brown, the face more ochraceous; palpus ochraceous-buff on innerside and beneath, variegated on outer side with orange-vinaceous and red; patagia tawny; thorax and fore wing predominantly deep russet, mixed with purplish-grey, the tegulae and metathoracic crests tinged with tawny, the fore wing mottled in parts with green.

Fore wing with the apex rather less acute than in *abathyglypta*, the markings similar but with the antemedial line weaker (hardly as strong as the medial), a more distinct subbasal line (or inner antemedial), and the postmedial more strongly incurved on posterior half, almost erect at hindmargin; the reniform is shining green, mottled with darker green, obliquely elliptical; there is a similarly coloured patch in fold from base to subbasal (?) line and another patch between the medial and postmedial from about middle of fold to hindmargin; this last patch extends to the antemedial line from middle of fold to behind SM^2, but is there less conspicuous; there is also some green irroration at costa and irregularly on distal edge of postmedial line from apex to R^2 and about M^2.

Hind wing and underside nearly as in *abathyglypta*, but the terminal dark band more nearly reaches the termen, where it is more distinctly produced on the veins.

Habitat.—North Korintji Valley, 5,000 feet, September-October 1921, ten ♂♂; slopes of Mount Korintji, 7,300 feet, August-September 1921, one ♂.

A single ♀ in the Joicey Collection, from Mount Gedeh, 4,000-5,000 feet, August-September, 1924 (G. Overdijkink) almost certainly belongs here. In this specimen the green patches are enlarged, the medial one reaching almost to M and M^2, and the pale markings are present almost as in the ♀ of *abathyglypta*. In both ♂ and ♀ the palpus is as in a typical *Othreis*. Probably nearest to *O. mniopastea* Hmpsn., "Lep. Phal.," p. 335 (1926) (Malay States), from which it is at once distinguishable by the deep concavity on hindmargin on fore wing; in *mniopastea* this margin is exceptionally little incised.

51. *Anomis metaxantha* Wlkr. **leucolopha** subsp. nov.

♂, ♀, 50—52 mm.

Differs in the following points from typical *metaxantha* Wlkr., Spec. Lep. Ins., xiii, p. 1005 (1857) (Sikkim), which is erroneously sunk by Hampson to *fulvida* Guen., "Spec. Gén. Lép.," vi, p. 397 (1852) (Java).

Size apparently rather larger; fore wing deeper rufous; ♂ with the costa rather more strongly swollen at about 4 mm. from base, but with no trace of the second costal swelling, which is typically present in Indian *metaxantha*, the wing slightly broader, with the termen rather less oblique from R^3 to the tornus than in Indian specimens; first abdominal tuft (crest ?) pure white and very conspicuous; the type has unfortunately lost this tuft, but the hollow where it has been is very marked, and in the other ♂ and the ♀ the tuft is large, at once attracting the eye; only one Indian ♂ in the Joicey Collection shows any trace of white on the tuft, and in that specimen it is largely overlaid with brown hair; in the non-typical ♂ the orange spot in fold proximally to the postmedial line is much reduced, in the ♀ it is almost obsolete, but in the type this marking is much as in Indian specimens.

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂♂, one ♀.

This subspecies is somewhat intermediate between *metaxantha* and *fulminans* Beth.-Bak., *Nov. Zool.*, xiii, p. 239 (1906) (Brit. New Guinea), which may well prove to be a strongly defined race of *metaxantha*, with the fore wing still darker than in the subspecies *leucolopha*, with the costal swelling in ♂ much more exaggerated, and with the hind wing more strongly produced about the radials.

52. *Calpe* **subnubila** sp. nov.

♂, 62 mm.

Coloration nearly as in *ophideroides* Guen., "Spec. Gén. Lép.," vi, p. 374 (1852) (India), from which it differs in the following points. Palpus perceptibly shorter; fore wing with the apex even more acute than in *ophideroides*, but the termen, though strongly curved, not angled at R^3, the lobe on hindmargin larger, leaving the indentation beyond it proportionately shorter; the hind wing appears slightly smaller in proportion to the fore wing. Fore wing slightly deeper and more rufous in tone than in *ophideroides*; hind wing from apex to about M^1 with a diffused dark terminal line and dark line at middle of fringe (most distinct on anterior half of wing), the whole fringe beneath tinged with brownish; the hair in cell of fore wing beneath slighter than in *ophideroides* and slightly darker than the wing (not yellow); proximal third of hind wing from costa to C tinged with brownish.

From *bicolor* Moore, *Proc. Zool. Soc. Lond.*, 1883, p. 19 (Solun), *subnubila* differs in the following respects. Size larger; coloration somewhat darker; lobe on hindmargin of fore wing rather larger; postmedial line less bright distally; fore wing beneath with more dark clouding (the hair in-cell darker); in *bicolor* the hind wing lacks the dark terminal line and darkened fringe. For this comparison I am indebted to my brother, Mr. L. B. Prout, *bicolor* being absent from the Joicey Collection.

Habitat.—Slopes of Mount Korintji, August-September, 1921, three ♂♂.

Subnubila may be no more than a local race of *bicolor*, to which it is nearer in shape than to *ophideroides*; but, as in many Noctuid genera, the species in *Calpe* often closely resemble one another, and without fuller knowledge it is difficult to determine the exact status of the various forms.

53. *Amphigonia* **motisigna** sp. nov.

♂, 42 mm.

Differs in the following respects from *hepatizans* Guen., "Spec. Gén. Lép.," vii, p. 338, pl. 24, fig. 12 (1852) ("East India"). Size smaller; termen of fore wing more strongly crenulate than in *hepatizans*, not incised from apex to the angle at R^3, but more distinctly concave between R^3 and tornus; termen of hind wing also rather more strongly crenulate, with the angle at R^3 rather less produced, a little more incised between the medials.

Fore wing with the antemedial line distally defined by whitish; the buff spot at lower angle of cell somewhat enlarged; the dark line dividing the pale terminal area from the rest of the wing crenulate behind M^1; subapical dark mark weak.

Hind wing with the pale clouding removed (from near the angle at R^3) to the hind margin between the postmedial and subterminal lines, where it is rather conspicuous.

Wings beneath greyer in tone than in *hepatizans*; the postmedial line weaker, minutely crenulate, more bent inward at costa of fore wing and at fold on hind wing; white subapical spots smaller, without any buff intermixed.

Habitat.—Barisan Range, western slopes, 2,500 feet, October-November, 1921, one ♂.

54. *Hyposemansis singha* Gn. **magnipunctata** subsp. nov.

♂, ♀, 42—44 mm.

Larger than typical *singha*, *Marmorinia singha* Gn. "Spec. Gén. Lép.." vii, p. 372 (1852), from Silhet, with the white marks on costa at origin of antemedial and postmedial lines (especially the latter) greatly enlarged, forming quite conspicuous spots; lines almost obsolete, the postmedial the best marked, slightly incurved from R^3 to the hindmargin, but not dentate, as in typical *singha*.

Underside rather brighter in tone than in the type-form, with the termen of hind wing more deeply-coloured (uniform whitish behind R^1 in Indian specimens).

Habitat.—North Korintji Valley, 5,000 feet, September-October, 1921, three ♂ ♂, one ♀, slopes of Mount Korintji, 7,500 feet, August-September, 1921, one ♂.

55. *Ochrotrigona triangulifera* Hmpsn. **quadratifera** subsp. nov.

♂, 50—52 mm.

Differs from typical *triangulifera*, *Bleptina triangulifera* Hmpsn., " Moths in India," iii ,p. 46 (1895) (Sikkim), chiefly in the shape of the large pale patch on postmedial part of fore wing, which is much broader and more quadrate at its posterior end in subspecies *quadratifera* than in the type-form; this patch is also somewhat paler in tone in the Sumatra form than in the Indian. In subspecies *quadratifera* the hind wing has the subapical pale patch about twice as large as in the type-form, and the whole termen of wing somewhat paler.

Habitat.—Barisan Range, western slopes, 2,500 feet, October-November, 1921, three ♂ ♂ ; South Korintji Valley, 2,000 feet, October 1921, one ♂.

It is just possible that *quadratifera* may prove to agree with subspecies *praetextata*, *Macna praetextata* Hering, Stett. *Ent. Zeit.*, lxiv, p. 98, Tab. I, fig. 1 (1903), from Borneo; but in Hering's figure the pale band on fore wing is shaped and coloured more as in typical *triangulifera* (though broader at distal end) and the termen of hind wing is without dark shading except from middle of fold to tornus. The proximal side of the pale band on fore wing appears less angulate at the cell than in either *triangularis* or *quadratifera*, and the medial line is drawn as almost uniformly curved (not bent inward in fold), but in the text this latter marking is said to become obsolescent near hindmargin, so it may well have been mis-seen by the artist.

56. *Pangrapta shivula* Guen. **quieta** subsp. nov.

♂, 41—43 mm.

Differs in the following respects from typical *shivula* Guen., "Spec. Gén. Lép.," vii, p. 372 (1852) (Silhet). Size definitely larger (Guenée cites 36 mm. for the ♀, which appears rather larger than the ♂); wings greyer, without the wood-brown tinge of *shivula;* costa more broadly whitish at middle, less broadly grey at apex; antemedial line much more oblique; pale orbicular larger, more conspicuous (?); dark markings at angles of termen almost obsolete. Fringe of fore wing more uniformly buff (less darkened behind R^2). Hind wing with the inner lines obsolescent, the outer lines somewhat weaker than in typical *shivula,* the fuscous shade between the two postmedials very weak.

Wings beneath rather more strongly contrasted than in typical *shivula.*

Habitat.—Slopes of Mount Korintji, 7,300 feet, August-September, 1921, two ♂ ♂.

The above comparison is made with specimens from Ceylon and Tonkin in the Joicey Collection and with Guenée's description of *shivula,* the type not being before me for comparison. In the ♀ from Tonkin the orbicular spot is almost obsolete. Two ♀ ♀ from Benkoelen probably belong here, though the antemedial line on the fore wing is hardly as oblique as in the ♂ of *quieta,* and the lines on the hind wing are a little stronger.

Note.—The *Hypeninae* of this collection are held over for the present in the hope that later on it may be possible to publish some more systematic papers on the Indo-Australian *Hypeninae.*

A REVISION OF THE GENUS *PHYCIODES* Hübn.

(Lepidoptera *Nymphalidae*).

By ARTHUR HALL, F.E.S.

(*Supplement to* The Bulletin of the Hill Museum, Vol. II.)

(*Continued from p.* 20.)

3. *P. perse* Edw.

Melitaea perse Edw. "Papilio" ii, p. 136 (1882); Holland, Butt. Book, p. 146, t. 16, f. 19, ♂ (1898); Seitz' "Macrolep.," v, p. 433, t. 88, f. F.2 (1913).

Exp. 23—30 mm.

♂, ♀. Very closely allied to *P. elada callina* Boisd. but the fore wing a little longer. Upperside of the same general pattern as *P. elada callina* but the fulvous spots larger, separated by thinner black lines; the median spot in 1b of fore wing generally large and oblong, and median spots 2-5 nearly always well marked; postdiscal spots sometimes almost as large as those of the discal series; submarginal spots small but well marked, the series generally complete. Hind wing almost as in *P. elada callina* but the spots larger, particularly the submarginal ones, which are lunular or conical.

Underside.—Fore wing differing from *P. elada callina* chiefly in the white submarginal spots being larger and more uniform, that in 3 scarcely larger than the rest. Hind wing as in *P. elada callina* except that the fulvous postdiscal spots are larger and less broadly defined with black.

Habitat.—Arizona, Pima Co. (5,000 ft.), Pearce Mountains, Cochise Co., Fort Grant, White Mountains; Mexico, Northern Sonora, Magdalena, Durango City.

Dated specimens April, May, June, August. This species, which resembles a miniature *Melitaea athalia* or *M. aurelie*, may be another race of *P. elada*, but it is advisable to keep it separate until something is known of its early stages. One of its principal distinctive characters is the uniform size of the white submarginal spots on the fore wing beneath, the spot in 3 not being distinctly larger than the rest, but in the type specimens of *P. elada hepburni* three have these spots of equal size and two have the spot in 3 larger, so that this character is unreliable. Moreover, *P. perse* seems to entirely replace *P. elada* where found, and the single Durango specimen in the Godman and Salvin collection looks rather like an intergrade. The Northern Sonora specimens recorded by Godman and Salvin as *P. imitata* belong to

P. perse. Holland's fig. of *P. perse* is pretty good, but that of Seitz is very poor.

4. *P. theona* Mén.

Melitaea theona Mén., Cat. Ac. Petr. Lep., i, p. 86, t. 2, f. 5 (1855); Streck., Cat., p. 126 (1878); *Phyc. theona* Godm. and Salv., Biol. Cent.-Am. Rhop., i. p. 192 (1882); *ibid.*, l.c., ii, p. 677 (1901); Staud. Ex. Schmett. i, p. 91 (1888); Röb. in Seitz' "Macrolep.," v, p. 438, t. 89, f. G.1-3 (1913).

= *Mel. thekla* Edw., *Trans. Am. Ent. Soc.*, iii, p. 191 (1870); Streck. Cat., p. 126 (1878); Holland, Butt. Book, p. 147 t. 17, f. 15, 16 (1898); Seitz' "Macrolep.," v, p. 433, t. 88, f. F.5 (1913).

= *Mel. bollii* Edw., "Field and Forest," iii, p. 101 (1877); Seitz, "Macrolep.," v, p. 433 (1913); *ibid.*, l.c., p. 597, t. 103, f. C.3 (1916).

(*a*) *Eresia perlula* Feld., *Wien. Ent. Mon.*, v, p. 104 (1861); *Phyc. perlula* Staud. Ex. Schmett., i, p. 91 (1888); Röb., in Seitz' "Macrolep.," v, p. 438 t. 89, f. G.4, 5 (1913).

= *P. hondana* Weym., in Stübel's Reise, p. 119, t. 3, f. 5 (1890).

P. theona theona Mén.

Exp. 28—44 mm.

♂, ♀. Upperside dark brown. Fore wing, a small yellow spot in cell, a fulvous bar at middle of cell, often obsolete, a prominent yellow bar at end of cell and a transverse fulvous spot beyond discocellulars; below middle of cell a yellow subbasal spot in 1b; sometimes a median series of reddish-fulvous spots in 1b, and at the bases of 2-5, but in many specimens these are wholly obsolete; a curved discal band of large yellow spots, somewhat oval or oblong in form and generally well separated, the one in 3 the smallest; a postdiscal series of reddish-fulvous spots, the one in 1b the largest, the others gradually decreasing, sometimes all obsolete above vein 2, the two nearest the costa pale yellow if present; a yellow submarginal spot in 3, sometimes with smaller ones above and below it; the other submarginal spots absent or represented by dots. Hind wing with a fulvous spot at end of cell; sometimes from one to four other fulvous or yellowish spots on the basal area; discal band pale yellow, of nearly uniform width, its spots about twice as long as broad, well separated; a postdiscal series of reddish-fulvous spots, very variable in size but the series always complete; submarginal spots pale yellow, small, rounded, sometimes all obsolete.

Ciliae black and white, prominent.

Underside—Fore wing fulvous from base to beyond middle; yellow spots in and below cell defined with black; discal spots as above but paler, sometimes whitish; postdiscal spots in 2 and 3 often obsolete but those in 4-6 always present, large, reddish-fulvous; a submarginal series of small white spots, the one in 3 more than twice as large as any of the others. Hind wing yellowish-white at base; veins black; a broad reddish-fulvous subbasal band crosses the wing from costa to inner margin, enclosing a pale yellow spot at end of cell; discal band yellowish-white or very pale yellow; reddish-fulvous postdiscal spots larger than above, outwardly concave; submarginal spots yellowish-white, large, nearly uniform in size; margin blackish.

Sexes alike.

Habitat.—Southern California; Arizona; Texas; Mexico, Northern Sonora, Durango, Jalisco, Tampico, Presidio de Mazatlan, San Blas Atoyac, Misantla, Iguala, Oaxaca, Yucatan; Guatemala, Escuintla La Antigua, Moran, Palin, Polochic Valley, Ysabal, Duenas, Gualan, Quirigua; British Honduras, Punta Gorda, Belize; Honduras, San Pedro Sula; Nicaragua, Matagalpa, Chontales; Costa Rica, Guatl, Puntarenas.

A very common species in Mexico and Guatemala from sea-level up to 6,000 feet, but becoming scarce in Costa Rica, and rather local in Texas and Arizona. I have taken specimens in all months except April and November, so that it evidently flies throughout the year. It varies a good deal in the size of the spots and colour of the discal bands, the latter being sometimes cream-colour and sometimes ochraceous-fulvous. Seitz's two figs. of the upperside give a good idea of the normal variation, the differences between them being individual, not sexual. Specimens with the fulvous median spots of fore wing unusually well developed (as in Seitz's fig. named *bollii* on pl. ciii) are *ab. thekla* Edw.; they occur with typical examples, but are particularly prevalent in certain localities, as, for instance, the vicinity of Fort Grant in Arizona (coll. Brit. Mus.) and in Northern Sonora. In *ab. bollii* Edw. these median spots are equally well developed, but the discal spots are partly confluent with those of the postdiscal series; this form is only known to me from Texas. Costa Rica specimens have the discal spots of fore wing very large and contiguous.

(*a*) *P. theona perlula* Feld.

♂, ♀. Upperside—Fore wing cell and base of cellule 1b fulvous, with a yellowish spot outlined in black at end of cell; discal spots in 1b and 2 yellowish-fulvous, oblong, twice as long as in *theona theona*, that in 3 small or obsolete, those in 4-7 as in *theona theona*; reddish-fulvous postdiscal spots as in *theona theona* or obsolete; submarginal spot in 3 well-marked. Hind wing discal band pale fulvous, greatly broadened basad, often occupying the whole basal area; reddish-fulvous postdiscal spots large; submarginal spots small or absent.

Underside as in *theona theona* except that the discal spots are larger and that the subbasal band of hind wing, when complete, is largely blackish, only the two large spots at the end of the cell being fulvous; in some examples, however, only these two spots remain, the band being obsolete both near costa and inner margin.

Habitat.—Colombia, Onaca in the Sierra de Santa Martha (2,000 ft.), La Mesa (4,000 ft., June), San Rafael, San Sebastian, San José, Frontino; Venezuela, Caracas, Mérida.

Type, from Venezuela, in Brit. Mus.

This form is very much rarer than *P. theona theona* and is highly variable, hardly two specimens being quite alike. *P. hondana* Weym. is an aberration in which the discal spots in 1b and 2 of fore wing coalesce with the fulvous basal patch. A still more extreme example of this form is in my collection from Mérida. The figs. of Seitz are good, that of the ♂ representing a specimen very similar to the type.

Valve of *P. theona theona* (pl. iii, fig. 7), narrow, with three processes at apex, the middle one much longer than the other two, sharply bent almost at right-angles; no process near middle. Uncus (pl. iii, fig. 24), entirely atrophied, the tegumen as seen from above ending in a broad, shallow excavation. Saccus with two rather short projections placed some distance apart.

5. *P. ezra* Hew.

Eresia ezra Hew., Ex. Butt. iii, Eresia t. 4, f. 29 (1864); *Phyc. ezra* Godm. and Salv., Biol. Cent.-Am. Rhop., i, p. 192 (1882); Staud. Ex. Schmett., i, p. 91, t. 36 ♂ (1888); Röb. in Seitz' "Macrolep.," v, p. 438, t. 89, f. G.7 (1913).

= *Eresia yorita* Reak., *Proc. Ent. Soc. Phil.*, v, p. 224 (1865); *Phyc. yorita* Röb. in Seitz' "Macrolep.," v, p. 438, t. 89, f. G.8 (1913).

Exp. 32—43 mm.

♂, ♀. Upperside blackish-brown. Fore wing with a large pale yellow spot in cell; an interrupted discal band of large, pale yellow spots, that in 1b 6-8 mm. long, sometimes divided into two, that in 2 a little shorter, that in 3 absent or very small, those in 4-6 long, wedge-shaped: postdiscal spots absent; a single small submarginal spot in 3. Hind wing with a broad yellow discal band divided into elongate spots by the veins; a postdiscal series of small red spots, sometimes all obsolete; no submarginal spots.

Underside—Fore wing as above except that base of cell is fulvous and that there are small red postdiscal spots in 4-6 and sometimes one in 1b. Hind wing yellow at base: at end of cell two large spots, either fulvous edged with black or wholly black, contiguous with a large black subcostal spot; discal band as above; postdiscal red spots larger, the series complete; a submarginal series of small white spots.

Habitat.—Honduras; Costa Rica, Port Limon; Panama, Calobre, Chiriqui (3,000-4,000 ft.), Panama City, Bugaba, Miguel Flores, Taboga, Palenka, Cebaca and other islands in Panama Bay. Type in Brit. Mus.

Dated specimens January, March, April, May, December. Differs from *P. theona* Mén., the only allied species, chiefly in the very large size of the yellow spots in 1b and 2 of fore wing and the absence of postdiscal spots. It seems to be commonest on the small islands off the Pacific coast of Panama and perhaps represents an insular race of *P. theona* which has spread again to the mainland. Reakirt's type of of *P. yorita*, which is an absolute synonym according to Godman and Salvin, was said to be from Honduras, and I have one example received from Staudinger similarly labelled. An example in the Tring Museum from Port Limon is the only one I have seen from Costa Rica.

The male armature resembles that of *P. theona.*

6. *P. harrissii* Scudd.

Melitaea harrissii Scudd., *Proc. Ess. Ins.*, iii. p. 167, N.36 (1862); Edw., *Can. Ent.*, ix, p. 165 (1867); Streck., Cat., p. 123 (1878); French, Butt., p. 170, f. 48, 49 (1885); Scudd., Butt., i, p. 674, t. 5, figs. 4 and 10 (1889); Skinn., Cat., p. 14, N.95 (1898): Holland, Butt. Book, p. 144, t. 17, f. 5, 6 (1898); Seitz' "Macrolep.." v, p. 433, t. 88, f. E.5 (1913); Barnes and McDunnough, Check List, p. 9, N.228 (1917).

= *Mel. ismeria* Harr. (non Boisd. and Lec.), Ins. Mass., p. 288 (1862).

(*a*) *P. hanhami* Fletcher, *Trans. Roy. Soc. Can*, ix, p. 207, figs. ♂, ♀ (1903); *ibid.*, *Can. Ent.*, xxxvi, p. 121 (1904); Skinner, Cat. Suppt.; p. 10 (1904); Barnes and McDunnough, Check List, p. 10, N.244 (1917).

P. harrissii harrissii Scudd.

Exp. 33—40 mm.

♂, ♀. Upperside blackish-brown; all markings fulvous. Fore wing with a double spot at middle of cell, a large transverse spot at end of cell and a narrow bar beyond discocellulars, two or three small subbasal spots in 1b, and sometimes traces of median spots at the bases of 2-4; a curved median band of large, somewhat oblong spots of nearly equal size; a postdiscal series of rather small roundish spots, those in 2-4 not always completely separated from the discal spots a single small submarginal spot in 3. Hind wing with two spots in the cell and sometimes other indistinct spots near base; discal band rather narrow, the black stripe separating it from postdiscal band not always complete; postdiscal band as broad as discal band or broader, consisting of large contiguous fulvous spots centred by small round black ones, the latter often pupilled with white dots; submarginal spots absent or appearing as thin lunules partly fused with the postdiscal spots.

Underside—Fore wing pale fulvous; black lines in cell, a subcostal band of four small black spots beyond cell, some black marks in basal part of 1b and a black blotch on costa beyond the middle; a postdiscal series of pale yellow spots, those in 1b and 2 generally obsolete; a submarginal series of pale yellow lunules bordered with black, the one in 3 not much larger than the rest; outer margin broadly fulvous. Hind wing basal area fulvous with four large pale yellow spots defined with black; discal band pale yellow, intersected by two black lines; postdiscal band fulvous with small black rings pupilled with white; submarginal lunules pale yellow defined with black, all large and distinct; outer margin broadly fulvous.

Habitat.—United States, New England States, New York, Illinois, Michigan, Wisconsin; Canada, Quebec, Ontario, Newfoundland.

Very similar above to *P. nycteis* Doubl. and Hew. but at once distinguishable beneath by the broad fulvous outer margins of both wings and the deep fulvous subbasal markings of hind wing. The early stages are well known and have been described in detail by Scudder and others.

(*a*) *P. harrissii hanhami* Fletch.

♂, ♀. Upperside—Fulvous discal spots of fore wing greatly extended, those in 1*b*-5 confluent with the postdiscal spots and also farther basad at the expense of the black ground-colour. Hind wing discal and postdiscal fulvous spots wholly confluent; black postdiscal spots rudimentary.

Underside lighter than in *harrissii harrissii*; margins paler fulvous, narrower.

Habitat.—Canada, Roundthwaite and Aweme in Manitoba; United States, Minneapolis in Minnesota.

I have not seen this form and am not quite sure whether it belongs here or to *P. nycteis.* The figure has the aspect of an aberration, but the describer states that he had a dozen examples before him. He observes that the upperside of some specimens resembles that of extreme examples of *M. harrissii* in which the yellow colour predominates, and the shape of most of the markings beneath is similar, but judging by the description the form does not seem to be constant.

Uncus of *P. harrissii harrissii* very short, rounded. Valve broad, without process at middle; a bent process at apex and a shorter one below apex. Saccus with two projections.

7. *P. nycteis* Doubl. and Hew.

Melitaea nycteis Doubl. and Hew., Gen. Diurn. Lep., t. 23, f. 3 (1847); Reak., *Proc. Ent. Soc. Phil.*, vi, p. 141 (1866); Streck., Cat. p. 122 (1878); *Phyc. nycteis* Scudd., Butt. East. U.S., i, p. 658, t. 5, f. 6 (1889); Holland, Butt. Book, p. 151, t. 17, f. 28-30 (1898); Röb., in Seitz' "Macrolep.," v, p. 435, t. 89. f. C.4 (1913); Barnes and McDunnough, Check List, p. 10, n. 243 (1917).

= *Mel. harrissii* Edw. (non Scudd.), *Can. Ent.*, ii, p. 163 (1870); Saund., l.c., iv, p. 161 (1872).

= *Mel. oenone* Scudd., *Proc. Ess. Ins.*, iii, p. 166, n. 35 (1862); Mead, Rep. Wheeler Exped., v, p. 762 (1875).

(*a*) *P. drusius* Edw., Papilio, iv, p. 57 (1884).

P. nycteis nycteis Doubl. and Hew.

♂, ♀. Exp. 33—42 mm.

Upperside very similar to *P. harrissii* Scudd. but the fulvous markings larger and lighter. Fore wing with similar markings in and below cell; discal band consisting of longer and less separated spots, that in 3 the shortest; postdiscal spots 1*b*-4 often partly fused with the discal band, those in 5-7 small dots or obsolete; a single small submarginal spot in 3, sometimes whitish. Hind wing with from 2 to 5 fulvous spots on basal area; discal band generally broader than in *P. harrissii*, the spot in 7 generally present; black stripe between discal and post-discal bands often interrupted; postdiscal spots longer than in *P. harrissii*, similarly marked with round black spots with or without white pupils, the pupil always present in 3; submarginal spots absent or appearing as thin lunules in 1-3.

Underside—Fore wing pale fulvous, sometimes yellowish in places, with the black markings of the upperside more or less distinctly reproduced in brownish; postdiscal spots 1*b* to 4 pale yellow, those in 5-7 dark brown with white centres; submarginal spots silvery-white, the one in 3 large and prominent, the other small, that in 4 often absent; margin pale fulvous, narrow, with a fine brown line. Hind wing basal area yellowish with four large silvery-white spots defined with brown; discal band yellowish-white, broad, with a brown line on inner edge and intersected beyond its middle by a fine brown line; postdiscal band brown, ill-defined, marked with a series of round black spots pupilled with white; submarginal spots silvery-white, lunular, that in 3 much larger than the rest, those in 6 and 7 also large; margin pale fulvous, narrow.

Habitat.—United States, Maine, Pennsylvania, Illinois, N. Carolina, Virginia, Mississippi Valley, Ohio, Indiana, Colorado; Canada, Ontario, Quebec, N.W. Territory.

Type in Brit. Mus.

The largest of the North American species and one of the most widely distributed. The early stages are well known and have been described by Scudder, Saunders and others.

(*a*) *P. nycteis drusius* Edw.

♂, ♀. Upperside with heavier black markings. Fore wing discal spots shorter, well separated from the postdiscal spots, the latter very small. Hind wing with the black stripe separating the discal and postdiscal spots heavy and complete; black postdiscal spots often partly fused with marginal border.

Underside—Fore wing with a median band of heavy blackish spots black-brown scaling in postdiscal area also extended. Hind wing with heavier brown lines.

Habitat.—North Carolina, Colorado, Texas, New Mexico.

Messrs. Barnes and McDunnough treat this dark form as a subspecies, but the localities available hardly seem to bear this out. More accurate data are needed to determine this point. I have specimens of *drusius* from Jemez Springs, New Mexico, taken in June and July, and the Tring Museum contains examples from Larima Co., Colorado, taken in the latter month.

In both its forms *P. nycteis* is at once distinguishable from *P. harrissii* by the outer margins beneath being much paler fulvous and only half as wide, by the lines on hind wing being brown, not black, and by the submarginal spot in 3 of both wings being much larger than the others.

Valve with the bent process at apex thicker than in *P. harrissii,* the process below apex more pointed.

8. *P. gorgone* Hübn.

Dryas reticulata gorgone Hübn., Samml. Ex. Schmett., i, t. 41, f. 1, 2 (1806-18); *Phyc. gorgone* Weym., *Stett. Ent. Zeit.*, 1892, p. 119; Barnes and McDunnough, Check List, p. 10, n.242 (1917).

= *Melitaea ismeria* Boisd. and Lec., Lep. Am. Sept., p. 168, t. 46 (1833); Streck., Cat., p. 122 (1878); *Phyc. ismeria* Scudd., Butt. East. U.S., iii, p. 1812 (1889); Holland, Butt. Book, p. 152, t. 17, f. 24, 25 (1898); Röb. in Seitz' "Macrolep.," v, p. 436, t. 89, f. C2, 3 (1913).

= *Mel. nycteis* Edw. (non Doubl. and Hew.), *Proc. Ac. Sc. Phil.*, 1861, p. 161.

= *Eresia carlota* Reak., *Proc. Ent. Soc. Phil.* vi, p. 141 (1866); *Phyc. carlota* French, Butt., p. 174 (1885); Dyar, *Can. Ent.*, xxv, p. 93 (1893).

= *P. ismeria ab. nigra* Cary, *Can. Ent.*, xxxiii, p. 307 (1901).

Exp. 27—43 mm.

♂, ♀. Upperside blackish-brown with pale fulvous markings. Fore wing with three or four spots in basal part of cell, a large transverse spot at end of cell, a narrow bar beyond discocellulars and a spot in 1b below middle of cell; a curved discal band of somewhat oblong spots of nearly uniform size, separated by the veins, the spot in 3 the shortest; a postdiscal series of small round spots, those in 6 and 7 generally white, seldom obsolete; a pale fulvous or whitish submarginal spot in 3 and sometimes other submarginal spots, which, however, are mere dots. Hind wing with one or two small spots in the cell; discal band fairly broad, distinctly outcurved at the middle and narrowed posteriorly; postdiscal spots 1c-5 large, centred by round black spots, the one in 3 sometimes with a white pupil, the spot in 6 smaller, generally without a black centre; submarginal spots pale fulvous or whitish, lunular when present, but often largely obsolete, the one in 3 being the last to go. Ciliae black and white, prominent.

Underside—Fore wing paler than above; black markings reduced; costa whitish; a submarginal series of small white lunules, that in 3 the largest, and a marginal series of white spots which are often fused with the submarginal spots so as to form short streaks. Hind wing light brown, sometimes varied with greyish; four or five white subbasal spots; discal band white, strongly outcurved at the middle, the spots distally excavated; beyond them some small separated white spots, that in 1a-c larger and oblique; a postdiscal series of small black spots, sometimes with white pupils; submarginal lunules white, strongly bent, that in 3 the largest; beyond them small white submarginal spots at least in 3, 6 and 7.

Habitat.—Canada, United States, Ohio, Virginia, Georgia, Kansas, Nebraska, Colorado, Texas, New Mexico, Montana.

Rather similar above to *P. nycteis drusius* Edw., but easily distinguishable from all other species by the peculiar underside of the hind wing.

A common species throughout the greater part of the United States and Southern Canada but apparently absent from the Pacific coast. I have specimens from as far N. as Saskatchewan, where it flies in May and June, and as far S. as New Mexico (Jemez Springs). *Ab. nigra* Cary is a melanic aberration.

Early stages described by Scudder, French and Dyar.

Valve (pl. iii, fig. 8) very distinctive, rather narrow, the apex with two sharp claw-like processes, and immediately below apex a large blunt process, not pointed at the end and arising much nearer to the apex than in most species of the genus. Uncus atrophied, the end of tegumen very broad and cut off nearly straight. Saccus with two projections, as in *P. tharos.*

9. *P. tharos* Drury.

Pap. tharos Drury, Ill. Ex. Ent., i, t. 21, f. 5, 6 (1773) ; Cram. Pap. Ex., ii, t. 169, f. E, F. (1779) ; *Melitaea tharos* Boisd. and Lec., Lep. Am. Sept., p, 170, t. 47, f. 3, 4 (1833) ; Streck., Cat., p. 120 (1878) ; *Phyc. tharos* Godm. and Salv., Biol. Cent.-Am. Rhop., i, p. 193 (1882) ; *ibid.*, l. c. ii, p. 677 (1901) ; Holland, Butt. Book, p. 153, t. 18, f. 1, 2 (1898) ; Skinn., Cat., p. 16, n. 115 (1898) ; Röb. in Seitz' " Macrolep," v, p. 436, t. 89, f. D 1, 2 (1913), Barnes and McDunnough, Check List, p. 10, n. 247 (1917).

= *Pap. morpheus* Fabr., Syst. Ent., p. 529, n. 370 (1775) ; Herbst. Naturs., ix, t. 260, f. 1-3 (1798) ; *Phyc. tharos* f. *morpheus* Edw., Butt. N. Am. ii, Phyc. t. 2, f. 1, 2 (1878).

= *Pap. cocyta* Cram., Pap. Ex., ii, t. 101, f. A-C (1779).

= *Pap. euclea* Bergs., Forn. v. Berch. Ins., iv, p. 23, t. 79 (1780).

= *Argynnis morphea* Godt., Enc. Méth, ix., p. 289, n. 60 (1819).

= *Melitaea pharos* Harr., Ins. Mass., p. 289, f. 116, 117 (1862).

= *Mel. packardii* Saund. in Pack. Guide Ins., p. 256 (1869) ; *P. tharos* f. *packardii* Edw., Butt. N. Am. ii, Phyc. t. 2, f. 11, 12 (1878).

= *P. pascoensis* Wright, Butt. West Coast, p. 165 t. 21. f. 198, 198a (1906).

(*a*) *Melitaea marcia* Edw., *Trans. Am. Ent. Soc.*, ii, p. 207 (1868) ; *ibid.*, *Can. Ent.*, ix, p. 1 (1877) ; *P. tharos* f. *marcia* Edw., Butt. N. Am. i, Phyc., t. 2, f, 3, 4 (1878) ; Grub., *Gen. Zeitschr. Nat.*, xvii, p 477, t. 8, f. 28, 29 (1884) ; Skinn., Cat., p. 16 (1898) ; Holland, Butt. Book, p. 156, t. 17, f. 26, 27 (1898) ; Röb. in Seitz' " Macrolep.," v, p. 436 (1913) ; Barnes and McDunnough, Check List, p. 10, n. 247a (1917).

= *P. nycteis* Wright (non Doubl. and Hew.), Butt. West Coast, p. 164, t. 21, f. 197 (1906).

P. tharos tharos Drury.

Exp. 27—38 mm.

♂. Upperside blackish-brown ; markings deep fulvous. Fore wing, cell fulvous with two spots outlined in black, the inner one double ; a narrow bar beyond discocellulars and two spots in 1b below cell, the inner one double ; small median spots generally present at the bases of 2-4, sometimes fused with the discal spots owing to the median black band being thin or obsolete in those interspaces ; discal spots large, oblong, of nearly uniform size, forming a curved band ; postdiscal spots

1b-5 rather large, round or quadrate, that in 1b often centred with black, those in 2-4 generally partly or wholly fused with the discal spots; postdiscal spots in 6 and 7 small or obsolete; a large submarginal spot, quadrate or lunular, in 3, the other submarginal spots linear or wanting. Hind wing with several fulvous subbasal spots in and around cell, defined with black; discal band almost always partly or wholly fused with the postdiscal spots owing to the separating black line, which is always thin, being only present anteriorly and posteriorly, so that the whole outer area is fulvous with a postdiscal series of round black spots and a black marginal border not more than 3 mm. wide; submarginal lunules thin or absent, placed near inner edge of marginal border when present.

Underside—Fore wing pale fulvous; several fine brown lines across cell and 1b; a median series of black spots, those in 2 and 3 thin or obsolete, the others generally heavy; discal spots sometimes yellowish, those in 1b-5 completely fused with the postdiscal spots; two large black spots in 1b and 2 near hinder angle and sometimes a smaller one in 3; outer margin varying from fulvous to dark brown, intersected by a fine brown line; a large yellow submarginal spot in 3, with a marginal spot of the same colour beyond it; sometimes two other submarginal spots at the apex. Hind wing pale yellow with fine or obsolete brown lines, two of which define a discal band; a postdiscal series of small brown dots; outer margin generally bordered with brown at least between veins 2 and 6; the submarginal lunule in 3 yellow, often obscured but generally traceable; the other submarginal lunules absent or merely outlined, but a waved brown line nearly always present.

♀. Upperside more heavily marked with black than in the ♂, discal spots of fore wing smaller, often yellowish, better separated from the postdiscal spots; on the hind wing the black line separating the discal and postdiscal spots is better marked, and the submarginal lunules are generally present at least in 1c-3.

Underside—Fore wing as in the ♂ or a little more strongly marked. Hind wing paler, sometimes whitish; brown lines darker and better defined; submarginal lunule in 3 larger and more prominent, generally whitish.

Habitat.—Canada, Ontario, Quebec, N.W. Territory, Newfoundland, Nova Scotia, S. Labrador; United States, generally except Pacific coast; Mexico, Northern Sonora, Durango City, Vera Cruz, Orizaba, Jalapa, Cuautla.

(*a*) *P. tharos* f. t. *marcia* Edw.

♂. Upperside a little brighter than in *tharos tharos*, the black markings narrower but more sharply defined.

Underside—Black median spots in 2 and 3 of fore wing nearly always wanting. Hind wing paler ochreous but with sharper brown lines; submarginal lunule in 3 nearly always large and prominent, whitish.

♀. Upperside as in the same sex of *tharos tharos* but the black line separating the discal and postdiscal band of hind wing nearly always complete.

Underside of hind wing more whitish but clouded with brown in the cell and postdiscal area; discal band and submarginal lunule in 3 nearly always white, the latter often very large.

Localities as above.

P. tharos is by far the commonest of the N. American species. The early stages are well known and the seasonal differences have been ably described and illustrated by Edwards. *P. tharos tharos*, to which *P. morpheus* Fabr. is pure synonym, is the form of the summer months, flying from June to September, and *P. tharos marcia* that of the winter and spring, but the two forms are not sharply separated, as is to be expected, as there seems to be a succession of broods throughout the year in the Southern States. In addition to the seasonal differences both sexes are very variable, and although there do not appear to be any fixed local forms the specimens from certain districts often show slight, although not constant peculiarities; for instance, examples from Albuquerque, New Mexico, in the Tring Museum are very pale, a characteristic of specimens from arid regions, whilst many ♀ ♀ from the N.W. Territory of Canada are very dark. In some examples of the latter sex the discal spots of the fore wing are clear pale yellow, so that they recall *P. campestris camillus* Edw., and in others again the black markings are reduced to fine lines. Specimens taken by me in Southern Mexico are quite typical but rather small. *Ab. packardii* Saund. is a melanic aberration in which the black markings are suffused. *P. pascoensis* Wright, from Washington and Oregon, is a synonym, not a subspecies.

Valve of *P. tharos* typical of a great majority of species of the genus, considerably swollen at middle, thence evenly curved and ventrally concave, the inside slightly dentate towards apex, where there is a single short claw-like process; at about one-third below apex a long, thorn-like, strongly chitinized process. Uncus split into two rather long projections separated by a nearly circular excavation, the termination of each projection with two short teeth or hooks inside. Saccus also typical of a great number of species, having two fairly long projections of uniform width placed rather close together, their sides parallel and outer ends blunt, rounded.

10. *P. batesii* Reak.

Eresia batesii Reak., *Proc. Ent. Soc. Phil.* v, p. 226 (1865) ; *Phyc. batesii* Edw., Cat., p. 36 (1884) ; Scudd., Butt. East. U.S., i, p. 643, t. 14, f. 5 (1889) ; Holland, Butt. Book, p. 154, t. 17, f. 35, 36 (1898) ; Skinn., Cat., p. 17, n. 116 (1898) ; Röb. in Seitz' " Macrolep." v, p. 436, t. 89 f. D5 (1913) ; Barnes and McDunnough, Check List, p. 10, n. 248 (1917).

= *Melitaea tharos* Boisd. and Lec. (non Drury), Lep. Am. Sept. t. 47, f. 5 ♀ (1833).

Exp. 30—35 mm.

♂, ♀. Upperside very similar to the darker ♀ ♀ of *P. tharos* Drury. Fore wing with similar markings but the spots in 1b below cell often absent or only one present ; discal spots small and rather well separated, generally a little paler than the postdiscal spots, the latter rounded, small or very small. Hind wing almost as in the darker ♀ ♀ of *P. tharos* but basal area on an average blacker, often with only two spots in the cell.

Underside—Fore wing hardly differing from certain examples of *P. tharos* ; black median spots heavy but the one in 3 small and isolated ; spots near hinder angle also heavy ; outer margin paler yellow than in most examples of *P. tharos*. Hind wing paler ochraceous than in *P. tharos*, sometimes whitish in the ♀ ; in some examples the brown postdiscal dots are the only markings present, but in others there are feebly marked brown lines ; dark shading on outer margin absent or faintly indicated.

Habitat. — Eastern United States, New York, New Jersey, Pennsylvania, Maryland, Ohio, Virginia, West Virginia, Mississippi.

An obscure species, difficult to separate from dark ♀ ♀ of *P. tharos*, which often pass as *batesii* in European collections, but authentic examples of the latter have an aspect of their own, although the differences from *P. tharos* are difficult to define in words. In the

British Museum there are specimens from Virginia, "United States," and an unusually dark ♂ from Livingstone, Mississippi.

Dr. W. T. M. Forbes of Cornell University has been kind enough to send me the following notes on the species: "*Batesii* not only differs from *tharos* in colouring but has only one brood instead of three, flying half way between the first two of *tharos*, and a larva on a different aster (*divaricatus* if I remember). I have taken male *batesii* fresh in early June when *marcia* was rubbed, and rubbed *batesii* in early July when summer *tharos* was just beginning to fly at 2,000 ft.; all the dates are a little earlier here, but *batesii* is very rare. I do not see any difference in genitalia but they are certainly distinct enough biologically."

Scudder gives the end of May to the 22nd of June as the time of flight of *P. batesii*.

11. *P. phaon* Edw.

Melitaea phaon Edw., *Proc. Ent. Soc. Phil.*, ii, p. 505 (1864); Scudd., Buff. Bull., ii, p. 268 (1875); Streck., Cat., p. 120 (1878); *Phyc. phaon* Edw., Cat., p. 35 (1884); French, Butt., p. 176 (1885); Skinn., Cat., p. 16, n. 114 (1898); Holland, Butt. Book, p. 153, t. 17, f. 22 (1898); Godm. and Salv., Biol. Cent.-Am. Rhop., ii, p. 677 (1901); Röb. in Seitz' "Macrolep." v, p. 436, t. 89, f. C7, 8 (1913); Barnes and McDunnough, Check List, p. 10, n. 246 (1917).

= *Dryas reticulata gorgone* ♀ (non ♂), Hübn. Samml. Ex. Schmett., t. 41, f. 3, 4 (1806-18).

= *P. phaon* f. *hiemalis* Edw., Butt. N. Am., ii, Phyc. A 2, f. 14, 15 (1878).

= *P. marcia* Wright (non Edw.), Butt. West Coast, p. 165, t. 21, f. 200b, 200c (1906).

(*a*) *P. phaon* f. *aestiva* Edw., Butt. N. Am., ii, Phyc. t. 2, f. 16, 17 (1878).

= *P. phaon* Holland, Butt. Book, t. 17, f. 23 (1898); Seitz' "Macrolep." v, t. 89, f. C9 (1913).

= *P. tharos* Wright (non Drury), Butt., West Coast, p. 165, t. 21, f. 199, 199a (1906).

(*b*) *P. phaon maya* subsp. nov.

P. phaon phaon Edw.

Exp. 24—36 mm.

♂, ♀. Upperside blackish-brown; markings fulvous and pale yellow. Fore wing cell fulvous, crossed by four black lines; two or three small fulvous spots in 1 b below cell and often small median spots at the bases of 2-4; discal spots pale yellow, of unequal size, those in 1 b and 3 the smallest; postdiscal spots fulvous, that in 1 b often with a black centre, those in 2-5 as large as the discal spots or larger, that in 6 small or obsolete, followed by a white costal dot; a yellow submarginal spot, quadrate or lunular, in 3, the other submarginal spots represented by pale linear marks which often form a continuous line. Hind wing with four or five large fulvous subbasal spots; discal band fulvous, outcurved, slightly macular: black stripe between discal and postdiscal bands almost always interrupted between veins 3 and 6, sometimes more widely; postdiscal spots also fulvous, centred by round black dots; the submarginal lunules thin, whitish, or pale yellow, obsolete anteriorly. Cilia more prominent than in *P. tharos*, white between veins.

Underside. Fore wing pale fulvous with faint brown lines on basal half; pale yellow discal spots as above, bordered proximally by black spots of variable size, those in 2 and 3 often linear; spots in 5 and 6 also bordered distally by a black blotch on costa; postdiscal spots fulvous, united so as to form a broad band, those in 1 b and 2 bordered distally by heavy black spots: outer margin brown, varied with whitish and intersected by a dark brown line; submarginal spot in 3 bordered by a white marginal spot, the other submarginal spots rudimentary or obsolete, except two at apex. Hind wing light brown varied with pale grey; several spots on basal area outlined by brown lines; discal band sharply bent outwards at the middle, formed of rather small white spots; postdiscal dots blackish; middle of postdiscal and submarginal areas clouded with dark brown, within which the submarginal lunule in 3 stands out clear and white; the other submarginal lunules obscured, except two at anterior angle.

Habitat.—Southern U.S.A., Florida, Georgia, Alabama, Louisiana, Mississippi, Colorado, Kansas, California, New Mexico; Mexico, Northern Sonora, Mazatlan, Vera Cruz.

Type in coll. Holland.

(*a*) *P. phaon phaon* f. t. *aestiva* Edw.

♂, ♀. Upperside not essentially differing from *phaon phoan* but the discal band of hind wing sometimes faintly yellowish and the black postdiscal dots often partly fused with the marginal border.

Underside. Fore wing with black median spots larger, forming a continuous band; yellow discal spots also larger, brighter; outer margin more heavily marked with dark brown. Hind wing white, without brown clouding but with more sharply-defined brown lines; discal band concolorous; dark patch on outer margin smaller but deeper brown, the white lunule in 3 similarly standing out prominently within it.

Localities as above.

P. phaon is a common species in the Gulf States, where it is generally to be found along the borders of cypress swamps. Wright, referring to it as *P. tharos*, states that it has spread all over California within the last thirty years and the Tring Museum contains a long series from Indio in the Colorado Desert. The difference between the seasonal forms is very marked on the under surface, specimens of the winter and spring brood being typical. Holland's figure of the underside represents the summer form, as does also that of Seitz. In Mexico the species is scarce and local, but all the specimens I have seen from hat country are normal.

(*b*) *P. phaon* maya subsp. nov.

♂. Upperside. Black markings heavier than in *phaon phaon;* yellow discal spots of fore wing very small and placed upon an unusually broad black band; black postdiscal dots of hind wing contiguous with the marginal border, which is very broad; submarginal lunules nearly obsolete.

Underside as in the winter form of *phaon phaon* but the whitish discal band of hind wing better defined and the outer area less broadly clouded with brown.

Habitat.—Guatemala, Lake Amatitlan (3,800 feet, October). Type ♂ and 1 ♂ paratype in coll. Hall.

A specimen in my collection taken at Belize, British Honduras, in August, 1912, by Dr. F. L. Davis may represent the summer form of this race. It agrees with the summer form of *P. phaon phaon* except that the hind wings beneath are clear pale ochraceous instead of white and the markings somewhat finer.

Male armature of *P. phaon phaon* (pl. iii, fig. 2) showing close affinity with *P. tharos;* valve less hairy externally. Uncus with hooks.

12. *P. Mylitta* Edw.

Melitaea mylitta Edw., *Proc. Ac. Nat. Sc. Phil.*, 1861, p. 160; *ibid.*, *Proc. Ent. Soc. Phil.*, ii, p. 504 (1864); Mead, Rep. Wheeler Exped. V.,

p. 764 (1875) ; *Phyc. mylitta* Edw., Cat., p. 736 (1884) ; Dyar, *Can. Ent.*, xxiii, p. 203 (1891) ; Skinn., Cat., p. 17, n. 120 (1898) ; Godm. and Salv., Biol. Cent., Am., Rhop., i, p. 678 (1901) ; Röb. in Seitz', " Macrolep.," v, p. 437, t. 89, f. E1 (1913) ; Barnes and McDunnough, Check List, p. 10, n. 254 (1917).

= *Mel. collina* Behr., *Proc. Cal. Ac.*, 1863, p. 86.

= *Mel. pallida* Edw., *Proc. Ent. Soc. Phil.*, ii, p. 505 (1864) ; *Phyc. mylitta pallida* Barnes and McDunnough, Check List, p. 10 (1917).

= *Eresia mata* Reak, *Proc. Ent. Soc. Phil.*, vi, p. 142 (1866).

= *Mel. epula* Boisd., Lep. Cal., p. 54 (1869).

(*a*) *Phyc. barnesi* Skinn., *Can. Ent.*, xxix, p. 155 (1897) ; *ibid.*, Cat., p. 17, n. 121 (1898) ; Holland, Butt. Book, p. 155, t. 18, f. 5 (1898) ; Röb in Seitz' " Macrolep.," p. 437, t. 89, E2 (1913) ; Barnes and McDunnough, Check List, p. 10, n. 255 (1917).

(*b*) *P. mylitta mexicana* subsp. nov.

(*c*) *Phyc. thebais* Godm. and Salv., *Proc. Zool. Soc.*, 1878, p. 267 ; *ibid.*, Biol. Cent.-Am., Rhop. i, p. 194, t. 21, f. 13, 14 ♂, f. 15 ♀ (1882) ; Röb. in Seitz' "Macrolep," v, p. 436 (1913).

P. mylitta mylitta Edw.

Exp. 29—40 mm.

♂, ♀. Upperside blackish-brown ; markings light fulvous. Fore wing cell fulvous with black lines outlining a small spot at base, a large spot, sometimes double, at middle and a bar at end ; beyond the latter another broad fulvous bar ; three spots in 1 b below cell, the middle one double ; discal spots large, somewhat oblong, contiguous, those in 1 b and 3 slightly smaller than the others ; postdistal spots rather large, round, that in 4 often fused with the discal spot in the same interspace ; a complete submarginal series of fulvous spots, that in 3 larger than the rest and lunular, the others smaller but nearly always distinct ; sometimes a linear marginal spot in 3. Hind wing spots on basal area large, separated by black lines ; discal band fairly broad, not macular, the black line separating it from the postdiscal band very thin or obsolete between veins 3 and 6, often only present near costa ; postdiscal spots contiguous, marked with round black dots ; submarginal lunules well-defined, prominent, the series complete, that in 3 scarcely larger than the rest.

Underside. Fore wing pale fulvous, inclining to yellowish; black markings of upperside faintly reproduced in brown, only two rather small spots near hinder angle being deep black; submarginal lunules pale yellow, defined with brown. Hind wing pale yellow, sometimes clouded with brown, with fine brown lines defining the markings; subbasal spots and discal band of the ground-colour or paler, often whitish in the ♀; postdiscal dots brown, sometimes absent; submarginal lunules pale yellow or whitish, that in 3 large and prominent, the others often only outlined.

Habitat.—British Columbia; Western United States, Washington, Oregon, California, Nevada, Utah, Colorado, New Mexico, Arizona; N.W. Mexico, Northern Sonora. Type in coll. Holland.

Recognizable from most of the closely-allied forms by the very uniform tint of the fulvous markings above, well developed submarginal spots of both wings and the shape of the fore wings, the outer margin of which is straight or faintly concave between vein 4 and the hinder angle. A common species in the Western U.S.A. The larva feeds upon thistles, and the early stages have been described by Edwards, Mead and Dyar. *P. pallida* Edw. was founded upon specimens with slightly paler ground-colour and reduced black markings; such examples are frequent in the dry parts of Colorado, New Mexico, &c., and are transitional to the following form.

(*a*) *P. mylitta barnesi* Skinn.

♂, ♀. Upperside with black markings considerably reduced or obsolete: median black spots in 2 and 3 of fore wing absent; black line between discal and postdiscal bands almost wholly wanting on both wings; black postdiscal dots of hind wing also absent.

Underside as in *mylitta mylitta* but fore wing often with a large black median spot in 1 b.

Habitat.—British Columbia; Western U.S.A., Colorado, Utah. Type in coll. Skinner.

This form is particularly prevalent in the Glenwood Springs district of Colorado and may therefore be regarded as an incipient local race, but it occurs in other localities as an aberration. In the Tring Museum there are two specimens from Ozooyoos, British Columbia, exactly agreeing with the type of *barnesi* as figured by Holland and also several intergrades from the same locality.

(*b*) *P. mylitta* **mexicana** subsp. nov.

♂, ♀. Upperside. Fulvous markings rather duller than in *P. mylitta mylitta;* all black markings heavier. Fore wing, small fulvous median spots in 1 b and 2 absent; submarginal spots sometimes all wanting except the lunule in 3. Hind wing, the black line between discal and postdiscal fulvous bands complete, not broken at the middle; submarginal lunules thin.

Underside a little darker than in *mylitta mylitta*, the pale spots on fore wing more distinct.

Habitat.—Eastern Mexico, Jalapa (4,000 feet), Orizaba (4,200 feet), Cordoba, Cuesta de Misantla. Dated specimens November, December and April. Type ♂, allotype ♀ and 18 paratypes in Brit. Mus.; 4 ♂ ♂ paratypes in coll. Hall. Connects *P. mylitta mylitta* with the following race.

(*c*) *P. mylitta thebais* Godm. and Salv.

♂. Upperside even more heavily marked with black than in *mylitta mexicana*; all the markings pale yellow except the postdiscal spots of hind wing, which are fulvous but appear only as thin rings round the black dots or may be obsolete; discal band of fore wing broken into spots; only one submarginal spot present, that in 3; submarginal lunules of hind wing thin.

♀. Very similar above to the same sex of *mylitta mexicana* but darker; spots more yellowish, except the postdiscal spots of hind wing, which are often fulvous, either contiguous or distinctly separated.

Habitat.—Western Mexico, Oaxaca (type), Guadalaxara, Amecameca, Xucumantlan; Guatemala, Calderas, Chilasco. Type in Brit. Mus.

Some ♂ ♂ of this form strongly recall *P. campestris* on the upper surface, but the underside clearly shows them to belong to *P. mylitta.* Two of the Mexican specimens in the British Museum are dated April and July respectively. The Tring Museum contains some exceptionally dark specimens from Guadalaxara which recall *P. vesta boucardi.*

Valve of *P. mylitta mylitta* very similar to that of *P. tharos.* Uncus with a somewhat more quadrate excavation at apex. Uncus with similar hooks. Saccus (pl. iii, fig. 28) of the *tharos* type.

(*To be continued.*)

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